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PC FORMAT

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CD-ROM EDITION

WHICH 3D CARD?

Reviewed and rated: 14 of the best 3D graphics accelerators

THE MAKING OF HEXEN 2

Plus the latest on *Unreal*, *Quake 2* and *Jedi Knight*

BUILD YOUR OWN LEVELS

Quake maps: the level editors and tips from experts

ELECTION NIGHT

Jerry Clark interview: the man behind the BBC's General Election graphics

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CUTTING EDGE 3D!

Quake clone wars and the 3D card showdown: frontline report

DUNGEON KEEPER

Bullfrog's best game yet scoops a *PCF* Gold award! Peter Molyneux speaks...

BUGGED AGAIN?

News on the Pentium 2 release

PLUS! BRING YOUR PC BACK TO LIFE; TOP UTILITIES TESTED

"Are you bo

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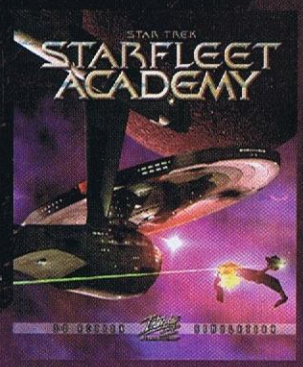

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BY GAMERS. FOR GAMERS™

Paramount

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SPRING '97

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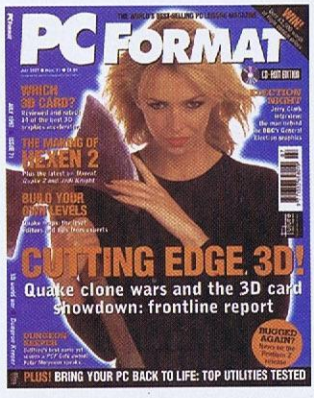
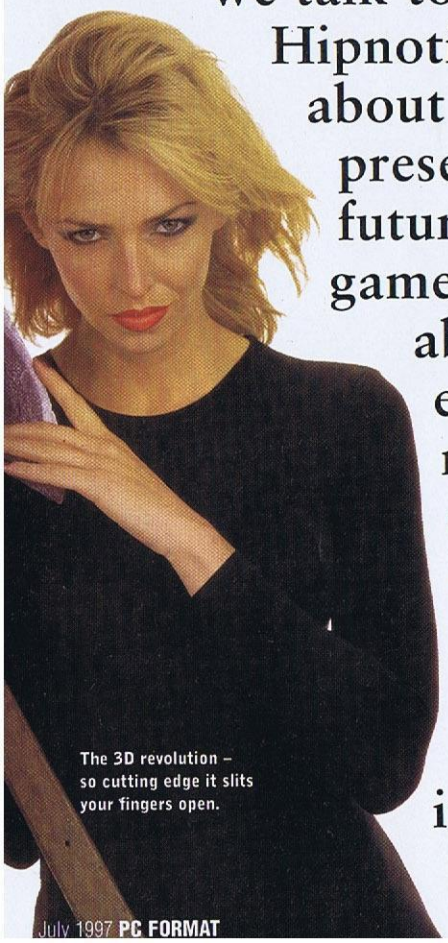


The 3D gaming world is getting bigger, stronger and faster. We demand entertainment that explodes from our screens in a festival of textured, mip-mapped gorgeousness. This month we talk to id, Raven, Hipnotic and Epic about the past, present and future of 3D games, reveal all about 3D engines and making your own worlds and test the hardware you need to make it happen for you.



The 3D revolution – so cutting edge it slits your fingers open.

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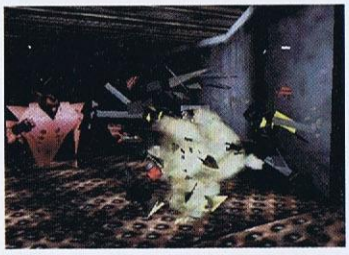

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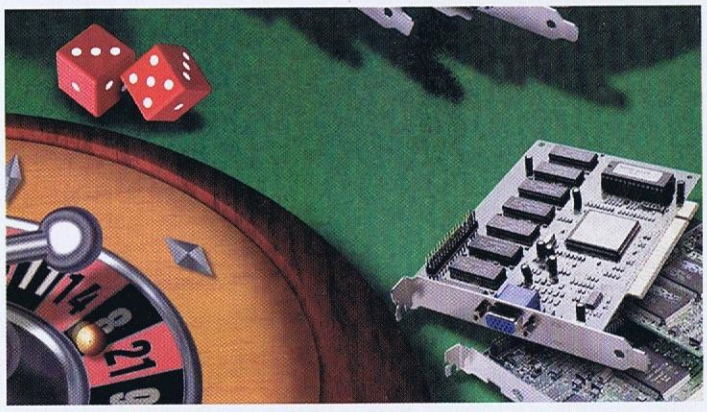
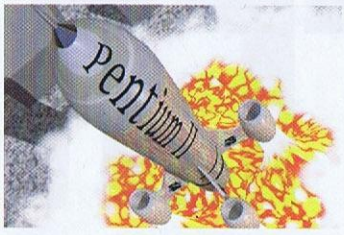


Supertest: 3D graphics cards page 106
Which 3D card do you want? Face it, you still don't have a clue, do you? But you will, if you keep reading for the next seven pages.



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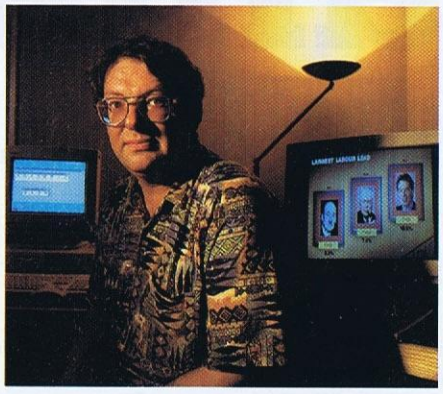
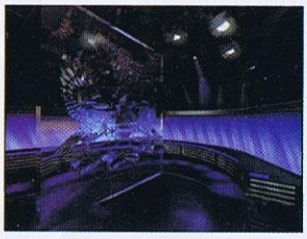


Without Jerry Clark, Peter Snow's Election night would be spent gesticulating wildly in front of a blank screen.



This entire set was built in a shed.

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Soft, strong and remarkably dissimilar to a labrador puppy.

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Covergifts

3D software worth £550 and a whole lot more

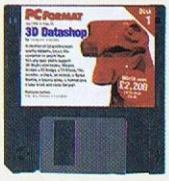
CD-ROM EDITION

That's right – this month we give you Macromedia's *Extreme 3D*, the ultimate in 3D modelling packages and all you need to create the best 3D worlds.

Resuming normal service, we have the biggest software selection known to man. Pull on your *Premier Manager 97* sheepskin coat, lace up your *Extreme Assault* boots, rev your *Nitro Racers* throttle and prepare for *Pandemonium!* It's time for another trip to PC heaven..

Plus: *Carmaggedon; Blood; James Bond; Quake 2 preview; Microsoft Money 97; Delphi; MemoWeb; Cybertation and more!*

HD EDITION



Disk 1
3D Datashop
10 3D mesh objects, ready to import into a 3D package.

Disk 2
***Quake 2* preview**
Sneak a peek at the next big thing.

EXTRA! 16-PAGE INSTALL MAGAZINE

Your complete guide to this month's disc.

Try to blow up a tank. In a helicopter. In *Extreme Assault.*

REPORTER

Photo-quality printers, DVD-RAM, 'push' Net browsers and Oasis: just a selection of this month's PC news.

Welcome to PC FORMAT

This issue we're on kind of a mission. A mission to put right something that we here at *PC FORMAT* should have made an awful lot more fuss about over the last six months. The time of bet-hedging and waiting for this particular new idea to catch on are over. Make no mistake. The arrival of decent, affordable 3D cards has entirely changed the PC landscape.

You really have no excuse not to soup up your PC with a graphics accelerator. They're as cheap as any half-decent add-on and the performance improvements and the difference they'll make to your PC are bigger than any other single upgrade. For less than £120 you could be playing *GLQuake* in double the resolution, with 256 times more colours. You really can't go wrong!

We urge you to buy a 3D card. This one piece of advice is the biggest computing tip we can offer this month. We plan to increase the coverage we give to 3D cards and software, and by Christmas stacks of games will be designed exclusively to get more out of them. Check out our supertest for our definitive round-up of the hardware and page 24 for the latest on the new round of *Quake* clones - nine new reasons to be cheerful about the future of your PC.

Enjoy the magazine and see you next month for our speed issue. With a rosy, light sourced-future ahead, I'm impatient to get there quickly.

James Binns, Editor

A mag with a mission

You know us by now. You now that we don't pull our punches when it comes to reviewing hardware or software. If we hate something deeply, we tell you. If we think something's amazing, we tell you that as well. Think of us as a guiding light in a wilderness of slick sales patter and overpowering computer jargon. We're here to help you cut a path through the technobabble and to tell it – and you – how it is. No other magazine offers such a comprehensive guide to the home PC user. What's more, we're completely independent – the mark we award to a product is an honest and, we hope, accurate assessment of its worth. Unlike other magazines we won't review something until it's 100 percent complete – and we certainly won't hurry our reviews. Sure, sometimes you have to wait a little longer to read a game review in PC FORMAT than some other magazines, but we think the wait is worthwhile. If you're serious about your PC, you'll want to read *PC FORMAT* every month for the latest news, views and advice.

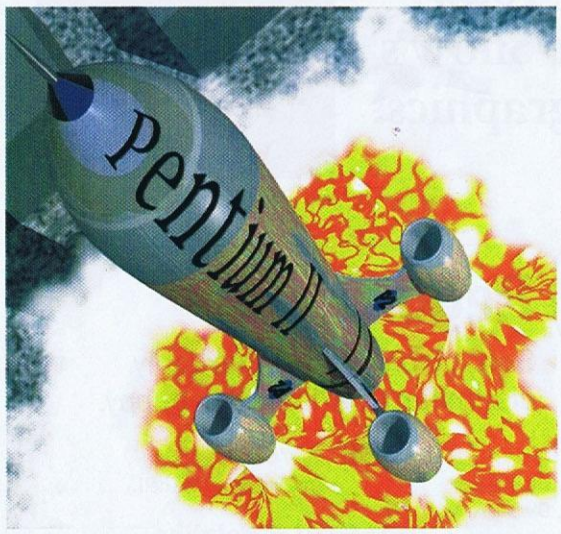
PENTIUM 2 LAUNCH

Klamath doesn't add up

No sooner does Intel launch its Pentium 2 processor than the first problems are discovered. **Adam Waring** reports on the Klamath bug.

Intel has launched the Pentium 2, its most powerful PC processor yet. It combines the high-end Pentium Pro architecture and MMX technologies and adds a speed boost, coming in 233MHz, 266MHz and 300MHz flavours.

In order to make effective use of the speeds these processors are capable of, they have a Dual Independent Bus Architecture: there are separate buses for the L2 cache and the system bus, which means that data can be fed to and read from the chip much faster. The processor comes in a new Single Edge Contact package, rather than the Socket 7 configuration. It requires a new kind of motherboard too – so you won't be able to simply whip out your old Pentium and put one of these in its place.



Intel launches the Pentium 2, the fastest PC processor money can buy. But could its math bug bring it crashing down to Earth?

It doesn't come cheap, though. It costs manufacturers US$636 for a 233MHz chip, US$775 for a 266MHz processor and a hefty US$1,981 for the 300MHz model, when they purchase in quantities of 1,000. 233MHz and 266MHz desktop machines are available now, although they are, unsurprisingly, expensive. We review a Viglen Pentium 2 on page 124.

However, even as the processor was being launched in the UK, we received news of a problem with its floating point unit. The bug – nicknamed Dan-0411 after the guy who discovered it and the date it was found (11/04/97) – occurs with certain large, floating point numbers which cause an overflow error. This has been compared to a problem that caused the Ariane 5 to veer off course, and be exploded by scientists seconds after its launch, which had been traced to a similar overflow error (though this was due to a software fault, rather than hardware).

The actual consequences of the bug to the end user are uncertain at present, but problems with the original Pentium processor which produced obscure division calculations are estimated to have cost Intel somewhere in the region of £300 million. Watch this space.

Intel can be contacted on ☎ 01793 403000 or reached via its web site at http://www.intel.com

NEW TECHNOLOGY

Snap up a digital camera

Prices of digital cameras are set to fall, due to an imaging technology that reduces manufacturing costs.

Soundvision's CMOS camera is cheaper, and better resolution than a conventional CCD.

It's based on a type of image sensor, called CMOS (complimentary metal-oxide semiconductor) active-pixel array, which replaces the CCD (charge-coupled device) traditionally found in these cameras.

Although the CMOS technology isn't any better quality than CCD, it's cheaper to make, meaning that manufacturers can build them for less, or offer cameras with higher resolutions at a comparable price. CMOS sensors require less power than CCD, and so longer battery life is another advantage.

The first CMOS active pixel sensor camera is the SVmini developed by Sound Vision. It has an 800 by 1,000 pixel resolution, an automatic flash, can store soundbytes and capture QuickTime movies. Contact Sound Vision on ☎ 00 1 508 270 0027.

INTERNET

Cybershopping on the way

Many on-line transactions involve storing credit card details on a computer, and if a Web site gives a service on receipt of your card details and these are later found to be invalid, then the trader loses out.

Your money's safe with us... Netbanx hopes to be the name in on-line trading.

Netbanx hopes to change attitudes by providing a secure and efficient service. Whenever a purchase is made, control switches to Netbanx's server, where all card details are sent in an encrypted form. These are checked by a clearing bank, and, if valid, the transaction is made. The server returns to the originating site with a 'Yes' or 'No and no card details are divulged.

STATS LIFE Internet shopping

Selling over the wire

You can't make money with the Internet. Or can you? More and more people are trusting the Net with their credit cards. Users who...

Use the Net to source travel information	23%
Will consider on-line shopping in the next six months	22%
Shopped on-line in the last four weeks	11%
Have disclosed card details on Net	10%

From NOP Research Group's Internet User Profile Survey carried out in December 1996. 1,000 users sampled.

Coming soon to a CD-ROM near you – here's the latest batch of games heading your way.

Populous: The Third Coming

Bullfrog ● Due out in September 1997

It's been four years in the making, but now you can prepare to level the land again. Build up your mana, channel it through a shaman, modify the landscape to favour your worshippers, or bring down a firestorm on their enemy. With a variety of landscapes, *Populous: The Third Coming* will also give you total control over what sort of religion you inspire – from small bands of magic warriors, to scalp-hungry braves.

Pax Imperia: Eminent Domain

THQ ● Due out in September 1997

The futuristic Empire-building and management sim *Pax Imperia* was a hit on the Mac a few years ago, and Heliotrope has brought the enhanced and expanded sequel to the PC. Starting as the leader of one of many alien races (you can design your own species) the battle is on, *Civilization*-style, to conquer sectors of the galaxy. A maximum of 800 worlds can exist per game, so to avoid having them all as your enemies, there will be sizeable diplomacy elements, as well as the inevitable space combat.

Little Big Adventure 2

EA ● Due out in September 1997

Its predecessor made jaws drop with its slick isometric graphics, and now *LBA 2* is back with a vengeance and a souped-up set of visuals. You'll get to guide hero Twinsen and the lovely Jaquette round their bouncy colourful world, using smart camera positions for better views of the action, and, as before, using an 'attitude selector' to decide how the characters approach situations. Additions include the ability to save at any point (sadly lacking from the original), a load of new vehicles to drive, and a much much bigger game world with some trips into outer space promised too.

iF22 Raptor

Interactive Magic ● Due out in july 1997

Yeah, it's *another* F22 simulator. But we've yet to see something this good looking, with three huge theatres of war mapped out from satellite photographs and accurate terrain altitude data. Every field, mountain, lake and river is visible from your F22, and even at low altitudes, it all looks very, very good. What's more, Interactive Magic's Chairman, Colonel "Wild" Bill Stealey, has ensured that the flight model is as realistic as possible without threatening national security. It's looking good.

Learn more stuff the entertaining way – these reference works are coming your way soon.

1998 Hutchinson Encyclopedia

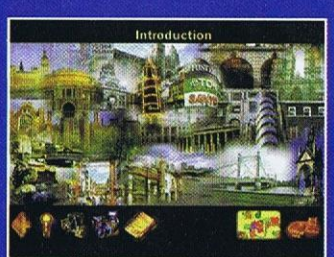
Helicon ● Due out in September

In a bid to be the first of next year's CD-ROM encyclopedias on the block, the *1998 Hutchinson Encyclopedia* is being launched mid-way through 1997. This incarnation promises a new design and software engine. There will be more content, a revised interface with better search facilities, and greater on-line connectivity, including Web links and on-line updates. The remaining question is, will it be enough to topple Microsoft's mighty *Encarta?*

John Cabot & The Merchant Venturers

Anglia ● Out now

500 years ago John Cabot set sail in the *Matthew* from Bristol docks, bound for China. He discovered Newfoundland. A replica of the *Matthew* left Bristol recently to recreate the journey, and Anglia's *John Cabot & The Merchant Venturer* challenges you to do the same. It features a rendered 3D model, created with data from the plans for the replica ship. You make all the decisions, stocking up on everything from navigation charts to biscuits, and exploring above and below decks..



Virtual London

AA Multimedia ● Out now

Now you can visit London without ever leaving the comfort of your armchair. AA Multimedia's *Virtual London* takes you around and about the streets of London for anything from a Parliment visit to a Thames river cruise. Navigation is via the Curiosity Shop – click on various bits of junk to instantly visit the scene. There are 40 key London sites, with 126 places to explore, including 17 minutes of video, 17 interactive maps and 75 QuickTime VR panoramas, where you can turn through 360 degrees and zoom in to take a closer look.

Nine Lives

Sony Music ● Due out in Summer 1997

While we don't necessarily agree with the press release's claim that they're "The world's greatest rock band", Aerosmith has been fairly successful over the last couple of centuries. Now the rockers have entered the realm of multimedia. Their new release *Nine Lives* features PC software in addition to the 'songs'. You can view video clips, play an 'awesome' interactive game called *Groove 10*, jam with your 'heroes' in the virtual studio using the keyboard to control the instruments, and link up with the Aerosmith Web site.

MASS STORAGE

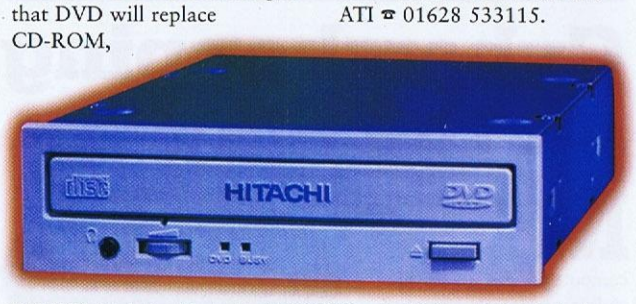
DVD develops

We're still waiting for DVD-ROM to happen in this country, but Hitachi has already announced plans to ship its GF-1000 DVD-RAM drive. DVD-RAM is a re-writable DVD format that offers a storage capacity of 2.6Gb per side of disc (equivalent to about 1,800 floppy disks), adding up to 5.2Gb in total. In comparison, DVD-ROM drives can only read data.

The GF-1000 features a 650-nanometre laser mounted in a double-lens/double-laser head. It reads regular DVD-ROM discs at double-speed (2.76Mb/s) and is compatible with CD-ROM. It is envisaged that DVD will replace CD-ROM, and there are expected to be around 70 million units by the year 2000. It's estimated that of these, 30 million will be DVD-RAM.

Limited quantities of the drive will be launched in Europe on 20 June. Price and availability for mass production are to be announced. Contact Hitachi Europe on ☎ 01628 585000.

Meanwhile, ATI has announced its ImpacTV2, a PC-to-TV chip, which supports DVD's Macrovision 7 copy protection system. It's designed to give crystal-clear video playback, enabling you to have DVD-ROM at the centre of your system. Price is to be announced. Contact ATI ☎ 01628 533115.



DVD-RAM: it's hot on the heals of DVD-ROM and will allow DVD disks to be written to, as well as read. It's the way of the future, we tell you.

HAPPY SHOPPERS Bargains galore

Flat monitor

Panasonic is bridging the gap between cathode ray and LCD monitors with its PanaFlat PF70. The 17-inch monitor has a totally flat cathode ray tube, which cuts reflection by as much as 87%. It's cheaper than an LCD screen too, with an RRP of £750. Panasonic ☎ 0500 404041.

Speakers

Yamaha has launched its cheapest speaker set yet. A pair of YST-M7s costs £39.99 and boasts ground-breaking features. Active Servo Technology produces a tight, deep bass that is impossible to get with conventional speaker technology. They can also be hooked up to a sub-woofer. Yahama ☎ 01908 366700.

PowerShot

Canon's digital camera, the Powershot 350, can fit into your pocket, with dimensions of just 95 by 90 by 50mm, and weighing in at 11 ounces. It has a maximum optical resolution of 640 by 480 pixels, built-in flash, autofocus, and can store up to 47 images. The cost is £586. Canon ☎ 0181 773 6000.

POP

Roll with it

Learn to play the easy way, by jamming along with rock legends Oasis.

When you tire of strumming along, you can entertain yourself with an Oasis fact.

How would you fancy being on stage at Glastonbury with 100,000 screaming fans worshipping the very ground you walk on? First things first, though. You're going to have to learn to play the guitar if you're going to get anywhere.

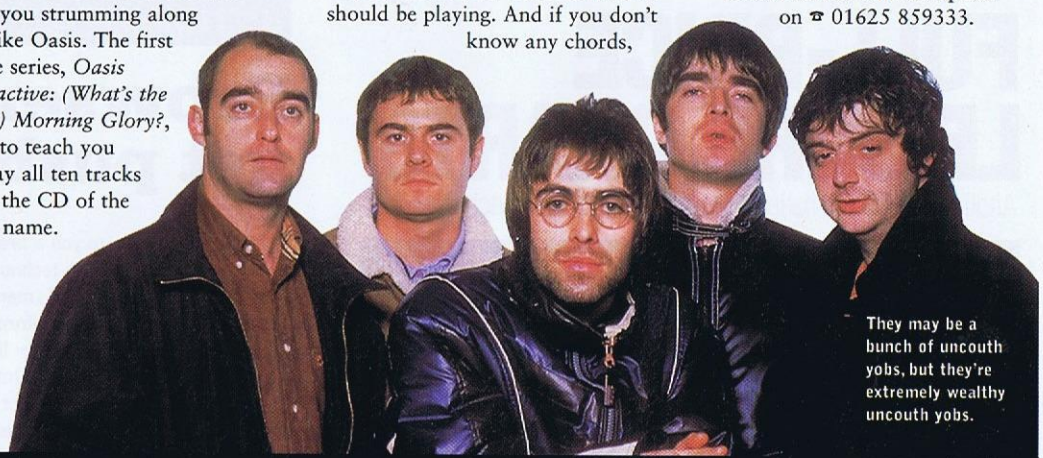
Europress is launching a multimedia CD-ROM that will have you strumming along just like Oasis. The first in the series, *Oasis Interactive: (What's the Story) Morning Glory?*, aims to teach you to play all ten tracks from the CD of the same name.

It's aimed at everyone from the beginner who's never picked up a guitar before, right through to the seasoned axe-grinder.

All the tracks from the album are included in full, but instruments can be switched in and out so that you can play along with the band. As the track plays, an on-screen display shows you what chords you should be playing. And if you don't know any chords, don't worry: you're shown how with an animated hand, telling you which strings to hold down.

Alternatively, if keyboards are more your style, you can view the chords on a keyboard layout, too. And if you like a sing-song, you can also croon along karaoke-style, the words are displayed as the music plays. In addition to this, the CD is packed with info about the band, and there's a quiz to test how knowledgeable you are about the band.

The CD-ROM sells for £29.95, and further releases already in development include Blur's *Parklife* and U2's *Achtung Baby*. There are also future plans to release titles from other top bands including Pulp, The Cranberries and Ocean Colour Scene. Call Europress on ☎ 01625 859333.



They may be a bunch of uncouth yobs, but they're extremely wealthy uncouth yobs.

PC Power

The Indiso PC Power Adaptor takes power from your PC's motherboard for battery-operated equipment such as speakers. It can be set to supply three, six or nine volts with an on-board jumper, doesn't occupy any slots and switches off with your PC. It costs £12.99. 1st Computer Centre ☎ 0113 231 9444.

Cheap Laser

Canon's LBP-660 is a low-cost (£350) laser printer offering 600dpi print quality and six pages-per-minute printing. It uses the Window Printing System and can print face-down, where documents retain their original order, and face-up, using a straight paper path. Contact Canon ☎ 0121 680 8062.

Flash modem

US Robotics has cut the price of its Sportster Flash modem (now £199), which includes a free software upgrade to the x2 standard. When it becomes available later in the year, x2 will enable you to access the Internet at speeds up to 56Kbps, US Robotics ☎ 01734 228200.

Backpack

MicroSolution's Backpack hard drive plugs into the PC's parallel port and installs in seconds, making it ideal for transporting large amounts of data by just carrying the drive around. It comes in sizes from 250Mb right up to 3.1Gb. MicroSolutions ☎ 001 815 756 411.

Slim CD-ROM

Memory Technology has launched the UK's smallest CD-ROM drive as part of its Blue Disc Datawise range. The eight-speed QuickCD is completely portable, has a depth of just 17mm, and occupies an area only slightly larger than a regular CD. It retails for £199. Memory Technology ☎ 0118 977 1588.

Letter from the Glass House

In this issue, **Ed Ricketts** is exposed as a dirty cheat. Back to basics, we say...

This month I have something of a personal question to ask, so please don't be offended. Where do you stand on cheating? Not cheating of the partner/marital variety, I hasten to add, but cheating in games, usually adventure or RPG games.

Now, I'm sure you'll agree that the odd tip or hint here and there is nothing to be ashamed of. We've all been in the situation of becoming engrossed in a game for days on end, sailing along nicely – and then becoming completely stuck, because you can't find a key or don't know where to go next. So you resort to a playing guide or walkthrough, sort the problem out and carry on as normal. After all, you don't really have a choice: if you're totally clueless, it's a case of either finding the answer or giving up on the game on which you've spent your hard-earned.

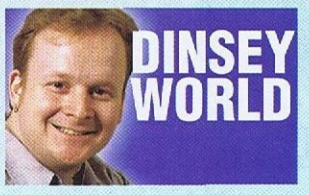
This happened to me recently. I've just been getting into *Tomb Raider* (I know, I know, a bit late, but hey, I'm a busy man), and was doing fine for the first three levels. Then, on level four, I got completely stuck and just couldn't make any progress at all. Frustrated, I downloaded a walkthrough from the Net, looked up the solution, kicked myself and carried on, feeling not a hint of guilt.

But as ever, as soon as you know there's a solution available somewhere, temptation sets in. Next time I got stumped, my search for the answer perhaps wasn't quite as vigorous. Last time, it took half an hour before I resorted to cheating; this time, it was maybe 15 minutes. Well, you think, as long as the answer's there, there's no point in me faffing about wasting all the time, is there? And so you cheat once again.

And now I'm worried. What if next time it's only five minutes? In extreme cases, of course, you end up not playing the game at all but following the walkthrough.

Gamers who reach this point are often too far gone to receive help; mention that they may as well be putting together a bit of MFI furniture for all the enjoyment they're getting and you'll probably be told to leave the room. I'm not that desperate yet, and with some strength and discipline, I hope never to sink to those depths. Please let my case be a lesson to you: remember, winners don't use walkthroughs.

Ed Ricketts is a regular columnist and games reviewer for *PC FORMAT*.



Some people would have us believe that the PC consumer has completely changed. You decide...

Stand up the true PC user

He is no longer a serious PC enthusiast, they say. Neither is he the older professional who likes the comfort of knowing he could work from home if he wants to with the occasional game of something thoughtful to unwind. He isn't even necessarily male.

The modern PC user is to be an ordinary Joe (or Josephine) who thinks owning a home PC is no different to owning a VCR or Pro Logic TV. Consider how PCs are advertised by manufacturers and retailers alike. It's all 'family this' and 'family that', complete with image of a nine year-old smiling into the monitor with their mum. Fake, fake, fake.

Games publishers, meanwhile, are releasing crash, bang, wallop arcade games or sports sims. Given the proliferation of 3D accelerator cards being pushed right now, you'd think that everyone who owns a PC is desperate to add the go faster stripes of a next generation console.

That the PC owner is a more varied species than ever before is inarguable. He is closer to the traditional gamer than ever before, sure, but is still just as likely to buy Corel *Print House V1.1* as *Kick Off 97*. And overall, he *is* still a bloke, PC literate and brainy.

A glance at the most popular PC software genres goes some way to proving this. In April, industry figures showed wargames/strategy as most popular, followed by God/management Sim. Would that ever happen on PlayStation? Cars and football came third and fourth, and the more cerebral graphic adventure was fifth. The beat-'em-up was 33rd.

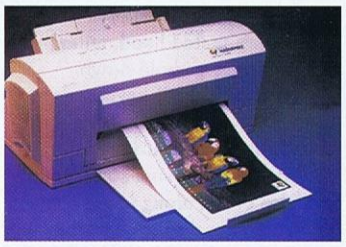
The true PC owner lives on. And, of course, he reads *PC FORMAT*.

CTW

Stuart Dinsey is the editor of *CTW*, the computer leisure industry's leading trade paper. He writes an exclusive column for *PC FORMAT* every month.

PHOTO QUALITY PRINTER OUTPUT

Reel to real



ALPs offers true photo-quality printing.

Alps' latest printer has output so good, it's all but indistinguishable from a real photograph. The MD-2300 Masterpiece can print photo-like images up to A4 in size, rivalling even professional printers. Up until now, this quality has only been available from dye sublimation printers. The MD-2300 retails for just £820, bringing photograph-quality printing within reach.

The printer uses the company's Microdry technology, which transfers 'dry' inks from tape cartridges onto the paper. Microdry allows for accurate placement of ink plus incredible control over density – the MD-2300 can produce 256 different graduations of each colour. Microdry inks are also waterproof, smearproof and fade-resistant.

To print in photo-quality mode you need to use specially formulated inks and photographic papers. The material costs for an A4 page is about £2.50. In addition to the photo-quality inks, cheaper near-photo-quality inks and metallic inks are also available. Contact Alps on ☎ 00 353 29 70677.

Near-photo-quality: noticeably dotty.

Photo-quality: as good as a print.

FULL-PRICE LEISURE CHARTS

Another look at the nation's top-sellers and how much they cost.

THE TOP TEN These are the most popular games in the land.	PRICE WATCH "How much?" Never pay over-the-top prices again.	
1 **X-Wing vs TIE Fighter** (NE) LucasArts *PCF* 70 (92%)	£28.99 MVC £29.99 HMV	£29.99 Dixons £29.99 EB
2 **Theme Hospital** Bullfrog (1) *PCF* 68 (90%)	£28.99 MVC £29.99 HMV	£29.99 Dixons £29.99 EB
3 **Premier Manager 97** (NE) Gremlin *PCF* 70 (88%)	£28.99 MVC £29.99 HMV	£29.99 Dixons £29.99 EB
4 **Championship Manager 2 96/97** (2) EIDOS (Not reviewed)	£18.99 MVC £19.99 HMV	£19.99 Dixons £19.99 EB
5 **C&C: Red Alert** Virgin (4) *PCF* 65 (90%)	£28.99 MVC £29.99 HMV	£29.99 Dixons £29.99 EB
6 **Tomb Raider** EIDOS (5) *PCF* 65 (86%)	£28.99 MVC £29.99 HMV	£29.99 Dixons £29.99 EB
7 **MDK** Interplay (3) *PCF* 68 (92%)	£28.99 MVC £29.99 HMV	£29.99 Dixons £29.99 EB
8 **Encarta 97** Microsoft (6) *PCF* 64 (91%)	£43.99 MVC £49.99 HMV	£44.99 Dixons £44.99 EB
9 **Duke Nukem Atomic** (7) GT Interactive (Not reviewed)	£23.99 MVC £29.99 HMV	£19.99 Dixons £29.99 EB
10 **Flight Simulator 6.0** (9) Microsoft *PCF* 64 (79%)	£39.99 MVC £39.99 HMV	£39.99 Dixons £34.99 EB

Chart compiled by ELSPA. Retailers polled: Dixons ☎ 01442 353000, Electronics Boutique ☎ 0800 317778, HMV ☎ 0171 439 2112, MVC ☎ 0181 424 0101 All prices include VAT. Prices correct at time of going to press (22 April 1997).

INTERNET

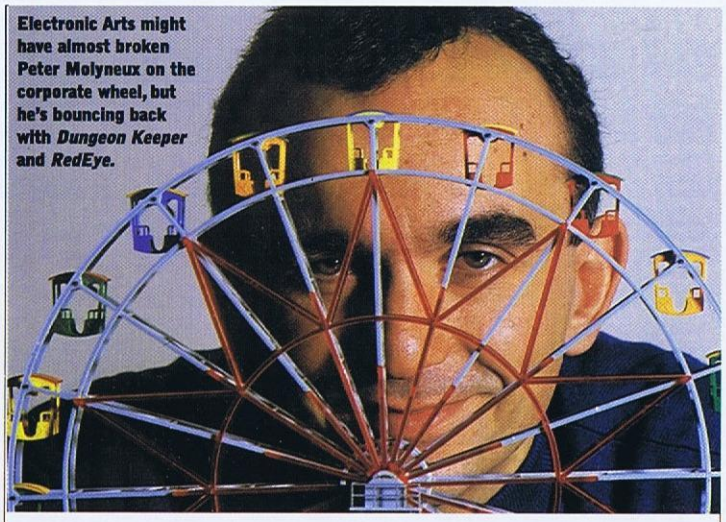
Browsers get pushy

Coming soon to you a browser near you is Push technology, a dynamic form of Internet browsing, where you're fed information at regular intervals, rather like watching a television channel. Instead of having to periodically connect to sites to check whether there's new information available, updated pages are automatically routed to you, ensuring that current information is always at hand.

Both Microsoft and Netscape have proposed standards for Push technology, but it looks like Microsoft's channel definition format (CDF) will become the accepted protocol which will be seen in the next generation of Web browsers such as *Microsoft Internet Explorer* 4.0 and *Netscape Communicator*.

Push technology is seen as the way forward for subscription-based Internet Web sites – you simply select your areas of interest and how often you'd like them to be updated. When you next log-on, the latest information is ready and waiting at your fingertips.

Microsoft can be contacted on ☎ 0345 002000, while Netscape is at ☎ 0181 564 5125.



Electronic Arts might have almost broken Peter Molyneux on the corporate wheel, but he's bouncing back with *Dungeon Keeper* and *RedEye*.

In the HOT seat

Name: Peter Molyneux
Title: Soon to be ex-head of Bullfrog Productions

Eh?
After years at the cutting edge of game design, Peter is waving goodbye to the company he founded, the moment that everything to do with *Dungeon Keeper* is done and dusted.

Ah, *Dungeon Keeper*. It's late...
It's been three years since Peter had the idea while stuck in a traffic jam, 18 months since the first release dates came and went,and almost a year since the final deadline for completion. It's been a case of fine-tuning the gameplay, enhancing the AI and getting things absolutely perfect. "It's like a painting, there's always something you wish you'd done slightly differently. In the end you have to stop yourself."

What makes it worth the wait?
"You could have had a vampire with x spells and it would have been the equivalent of a tank in *C&C*. We've added layers of emotional data, so if the vampire gets upset, he persuades the other creatures to have a rebellion. Wizards will pull back in battle and use their range weapons, creatures will make friends, walk round the dungeon together and fight well together. There isn't one huge feature that would be missing if we had released early but there are lots of little features. "

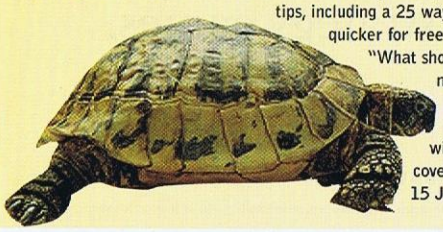
Where now for the man raised by Bullfrog?
He's off to start a new company, RedEye, as soon as he's done a PlayStation design for *Dungeon Keeper* and a multiplayer Internet design. After that, work begins on what Peter describes as "the coolest game ever."

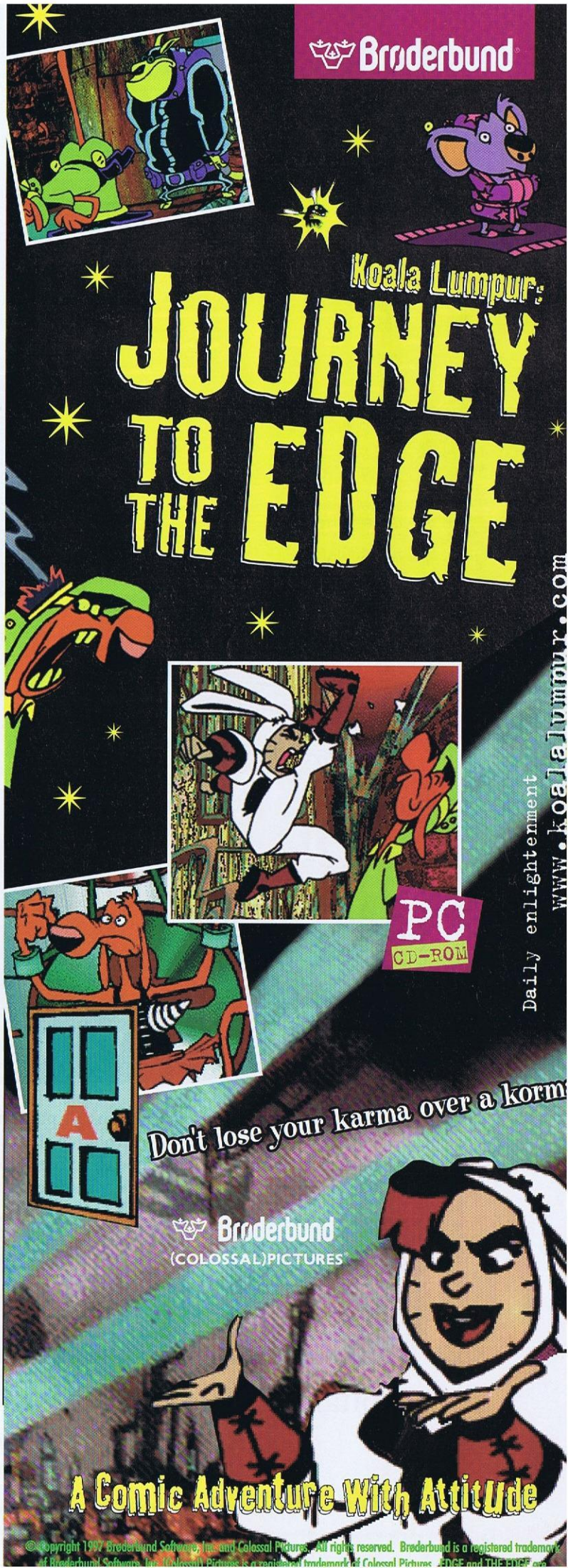
Bullfrog RIP?
Not at all. The Molyneux-less Bullfrog is alive and well, and working on *Populous 3*, which might well be ready in the Autumn.

SPEED

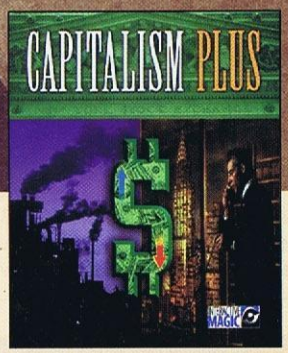
Next month

What a magazine we have lined up for you next month! We spent ages agonising over how to illustrate our cover story about making your PC go faster. Much faster. The best concept we came up with was borne in the fevered mind of Colin Mitchell. This is it: an old-fashioned roller skate with a firework rocket tied to it. With a tortoise strapped in. The idea had it all. The tortoise is your PC. Dependable. A wrinkled old friend who you'd much rather not trade in for a hare. The rocket is our lead feature. An explosive piece brimming with hints and tips, including a 25 ways to make your machine run quicker for free and the answer to the question: "What should I upgrade first if I feel the need for speed?" Don't worry. We rejected the cover idea and can now pledge that no animals will be harmed in designing the cover of issue 72, on sale Tuesday 15 July. Reserve your copy now.

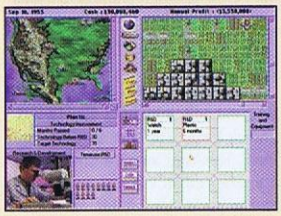




There is an alternative



Big business can have its ups and downs, Capitalism Plus™ provides them all. From the dizzy heights of the boardroom to the bottom line on the factory floor, with authentic business models, an easy to use tutorial and real world scenarios, Capitalism Plus is the ultimate strategy game of money power and wealth.



Capitalism Plus. The last word in business strategy games.

INTERACTIVE MAGIC™

Available for DOS 5.0 and Windows® 95 in May. www.imagicgames.co.uk

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Do you find yourself lost in a sea of satellite channels? Stuck getting around the streets? Doug Yur find the way...

We get so many channels on US television that it's easy to miss the occasional watchable programs that appear. Scottsdale Technologies thinks it may have the answer with Program Master, a device that, along with your desktop PC, helps you plan your TV viewing.

The Program Master links to electronic TV Host, an on-line service that, for US$50 a year, provides 10-day programming schedules for the top 100 broadcast, cable and satellite services. Once you've worked out what you want to watch, this information is transferred, via a hand-held infrared remote controller, to your television, video, dish and cable connection to tune in and record at the scheduled times. this service also makes it possible to search through the listings for particular programs, genres and even for your favourite actors.

You need never miss another rerun of Baywatch again

The software can be configured to perform the search automatically whenever you log on, so you need never miss another rerun of *Baywatch* again. You can print out your personalised program guides, and it can even print out a crossword for you, geared to your viewing tastes, for those rare and precious moments away from the idiot box.

Meanwhile, Delorme is attempting to make getting lost a thing of the past. The company, which specialises in street directory software, is packaging its *Street Atlas USA 4.0* with a link to the Tripmate Global Positioning Satellite receiver. The receiver sits on the dashboard of your car and transmits an accurate fix on your location to your laptop. The mapping software works out where your are and pinpoints your location on the on-screen street map.

DISK RECALL

Jaz snags

Iomega is recalling a number of Jaz disks. The company says it has discovered that the faulty disks contain a component that doesn't conform to its reliability requirements, so although the disks may appear to function correctly, they should be replaced.

Iomega claims that only a small portion of disks are affected, – about 50,000 in Europe – and it believes that any disks bought prior to 24 March, 1997 will be okay. It has also taken steps to remove all faulty disks from distribution, so any disks bought now should also be in the clear.

To see whether your disks are likely to be affected, look at the underside of the disk, where you should see a date stamp and a code. If the date falls between the period 13 March, 1997 and 20 April, 1997 *and* the code ends with the letters "MS", then the disk should be returned to Iomega for replacement.

A customer service hotline has been set up by Iomega in its Ireland office. The number to call is 00 353 1 807 5599. You can also drop an e-mail to eurosupport@iomega.com with the word "jazmedia" in the subject line – full procedure details will be e-mailed back. Replacement disks will be provided at no cost within a couple of working days.

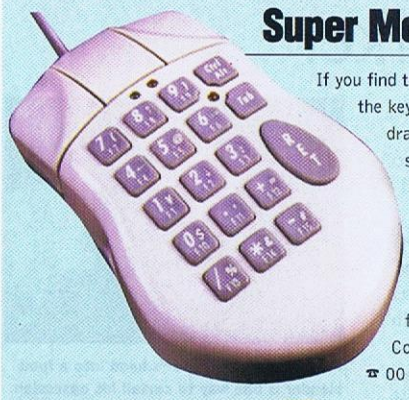
INSPECTING GADGETS

All the super-desirable stuff you're going buy when you win millions on the National Lottery.

Project yourself

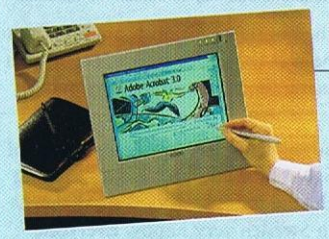
Need to project your presentations better? The Lightwave range of LCD projectors are the most compact and lightweight projectors available in the UK, weighing in at 4.3Kg. They're available in SVGA/VGA and VGA-only models, offer a palette of 16.7 million colours, have integrated stereo speakers and are bright enough to project a display in any room, even with the lights on. A host of features are available with a hand-held remote control. IMC Distribution ☎ 01344 872800.

Super Mouse



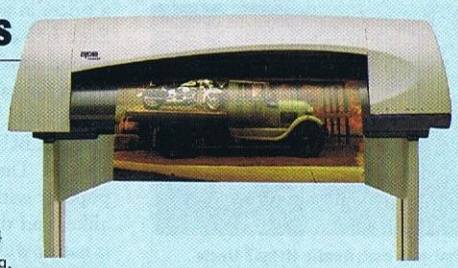
If you find that switching from the mouse to the keypad to input data to be a bit of a drag, then Super Mouse could be your saviour. It incorporates the keypad into a regular mouse housing, enabling you to tap keys and move around the screen single-handedly. It can be switched between number keys for data entry and function keys for, well, functions. Contact RLD Enterprises ☎ 00 1 1 888 539 7232.

It's a screen



It's accepted that graphics tablets are the only real way to draw on a computer. Wacom has cleverly combined a tablet and LCD monitor so that the image appears at the nib of the stylus as it is drawn. Unfortunately, the technology is rather expensive and so is being aimed initially at corporate boardrooms rather than at graphic artists. For further information contact Wacom ☎ 00 49 2131 1239

Bigger prints



Finding your desktop printer isn't up to the big jobs? The Croma 24 is a wide-carriage, full-colour, photo-realistic inkjet printer/plotter, that can manage printouts up to 24 inches wide by 15 feet long. Paper is supplied on a roller and the cutter chops off the required length, so you can print out you work full-size. TDS ☎ 01254 676921.

3D CD

Panasonic's eight-speed portable CD-ROM player plays both CD-ROMs and music CDs. It has built-in 3D surround sound speakers, although quite how well it achieves the effect from two speakers so close together we can't imagine. Call Panasonic on ☎ 0500 404041.

Strange tales

How do we know so much about the strange side of the technological world? Are we strange ourselves? No. We just make the stories up when we're bored.

Cyber stalker

OVER THE PAST FOUR MONTHS, THE Tamais family in Ontario have been stalked by a high-tech psycho known only as Sommy. He would regularly harass the family over the phone. It was reported that he could control the lights and all the electrical equipment remotely. Even rewiring the telephone system didn't work. NSI, a high-security services firm equipped with the latest in anti-surveillance equipment, found that there were no bugs, remote control devices, or phone taps in the house. It was at this point that the family's son, Billy, admitted that he was the cyber stalker. He'd been using the phone in his bedroom.

Forcing a cyber stalker's hand into a food blender is one way to curtail his obsession.

Tele-sales

ADVERTS ARE TAKING OVER THE world, like a vicious, unstoppable disease. However, it turns out that advertising may not be the work of Satan after all, because it's making the inhabitants of two small towns in Sweden very happy. Everyone in Lund and Norrkoping has been offered free phone calls – local and national. But they do have to pay a price, in a slightly different way. Each free call is interrupted by a 10 second advert BUY *PC FORMAT* when the call is connected, then one minute in, then every three minutes BUY *PC FORMAT* into the call. The system is proving very popular with users and advertisers alike, and there are plans to extend it nationwide, with adverts BUY *PC FORMAT* tailored to locations.

"What was that, Auntie Helga? Uncle Sigmund has died of drink Coca Cola?"

It's bad to talk

AS VOICE-DICTATION SOFTWARE IS becoming even more popular, you'd think everyone would be happy. Well, yes – being able to dictate straight into your PC could do away with the keyboard completely (see last month's cover feature). Unfortunately, as people are now beginning to find out, it brings just as many new problems. You see, frequent users of voice recognition are still suffering. Because voice recognition programs are currently unable to deal with intonation and emphasis in the voice, users are required to talk in monotone. As this manner of speech is difficult to maintain, the voice-typers are still suffering from RSI. Except this time, it's affecting their vocal cords.

TOMORROW'S WORLD

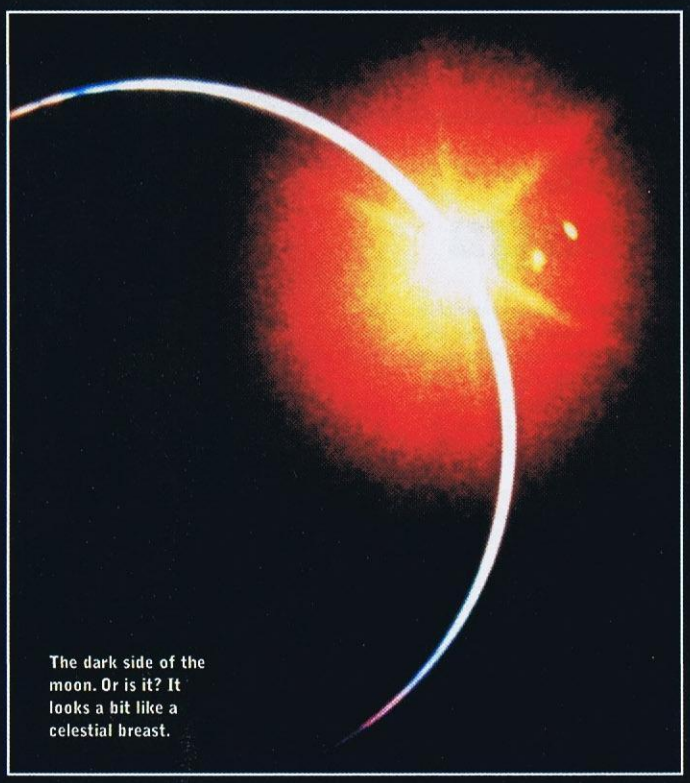
We gave **Richard Wentk** a time machine so he could write this column. He sent it in late, and ran off with next century's winning lottery numbers.

THEY'RE EVERYWHERE!

Planets are everywhere – it's official. Since 1995, scientists have discovered nine planets around various local stars. The latest discovery is a Jupiter-like planet orbiting a star called Rho Coronae Borealis, which is around 50 light years away, and can be viewed with the naked eye in the Northern Hemisphere between February and September.

The planet was discovered by making very fine measurements of the star's wobble. Although it's too close to the star to make life likely, the current theories of plant formation suggest that where there's one big planet, there are likely to be several smaller ones to keep it company. It seems the Sun itself isn't unique, either. Although it's often dismissed as an average star, it's actually much brighter than other stars like it, and only four percent of the stars in our galaxy are the same.

The Sun has been 'twinned' with a star just 46 light years away, within the constellation Scorpius. 18 Scorpii's colour, mass, temperature, surface gravity and speed of rotation all match the Sun's. The only differences are minor. Although no-one has yet tried checking 18 Scorpii to see if it has planets of its own, the chances are good that it does. And it may even have a solar system just like this one, too.



The dark side of the moon. Or is it? It looks a bit like a celestial breast.

Chips fried in radiation? Whatever next? Sausages battered in industrial waste? Chicken marinated in battery acid?

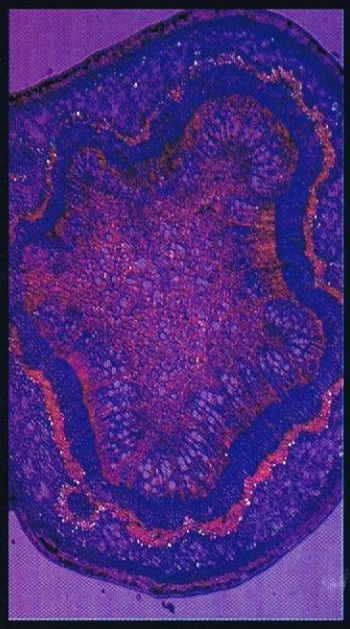
THANKS FOR THE MEMORY

You know the problem – you're just about to finish an essay, or you're a few seconds away from nailing that killer top-level boss, and the damn power goes. Thanks to the magic of Windows, it takes more time than it should to reboot everything. Meanwhile, some of your valuable information has gone for good.

This will no longer occur if the new range of 'posititronic' chips that are currently being designed at the Sandia Research Labs in New Mexico have their way. These new chips are similar to existing designs, but retain their data when powered down. Imagine a PC that uses no power when it's turned off, but can pick up exactly where you left it when you turn it on the next day. Imagine chips that power down between memory accesses to pare power consumption to the bone. And imagine displays that keep showing the same information when disconnected from everything.

Sandia's posititronic patent relies on chips that are literally bathed in hydrogen while they are made. The hydrogen leaves protons within the silicon, which can only move when the power is applied. When the power is off, the protons – and the information they carry – stays where it is, indefinitely.

Not only do the chips use much less power, they are also a great deal better at coping with radiation. Conventional chips are fried in areas of intense radiation. Protonic chips are more robust, which makes them ideal contenders for use in Outer Space, where radiation from the solar wind can play havoc with existing electronic systems.



Soon, this fellow will be able to chat up girls better than you, and order a kebab.

ARTIFICIAL LIFE – FOR REAL

Life, in all its diversity, is a wonderful thing. But now scientists at the Scripps Research Institute in La Jolla have created life of their own, of a sort. And they've made it 'evolve', too.

Biochemists have been enticing some strands of RNA to evolve by creating random variations, and picking out the ones that perform one particular chemical task best. Now Gerald Joyce and Martin Wright of the Institute have cut out the middle man by creating a 'replication engine', which makes random variations in the strings of RNA automatically, and favours the RNA that performs a certain task. The system is self-sustaining once it starts. Scientists need to 'feed' it with nucleic acids, but as long as it 'eats' it keeps working.

It may be possible to use these systems to follow the ways bacteria develop resistance to antibiotics, as well as solving a number of other biochemical problems. And if the 'engine' is allowed to deal with influences from the outside world, instead of communicating solely through chemicals, it may even start to respond in a natural way.

tomorrow today

DEATH OF A SMOG MONSTER

The race is now on to discover a replacement for the smog-creating internal combustion engine. The Canadian company Ballard Power Systems thinks it may have just the thing, in the shape of its hydrogen-oxygen fuel cell. Fuel cells were originally developed for the space program, and are highly efficient – unlike a petrol engine that wastes over 85 percent of the available power, you can get 60 percent of the energy out of a fuel cell.

ANTI-MATTER BUBBLE BURSTS

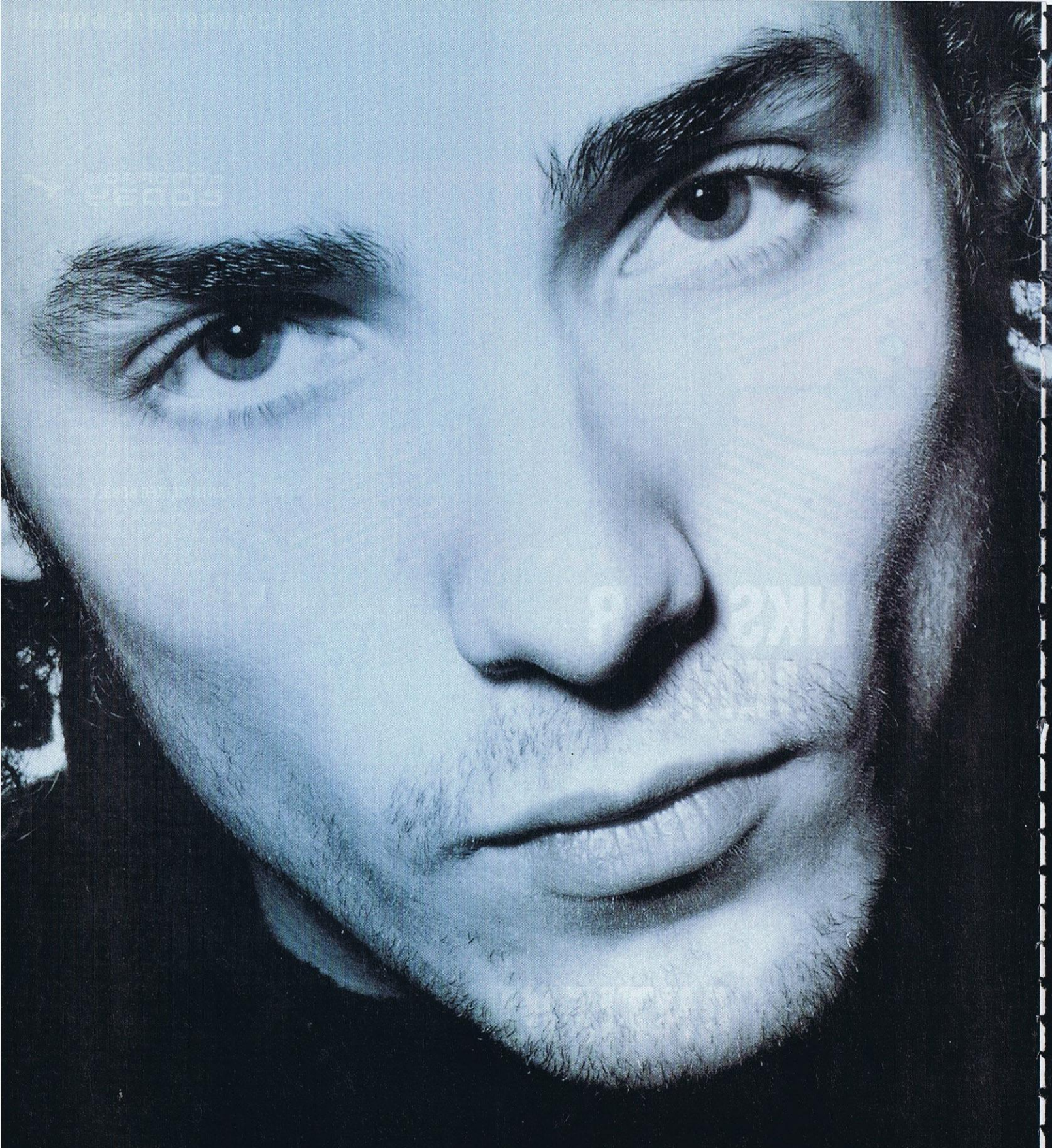
Scientists were amazed recently to find a bubble-like stream of anti-matter escaping from the centre of our galaxy. Anti-matter disappears in a flash of energy when it comes into contact with normal matter, so there's not a lot of it around. According to Charles Dermer of the Naval Research Laboratory in Washington: "It's like finding a new room in the house we have lived in since childhood." Researchers aren't sure whether the anti-matter is caused by a huge black hole at the centre of the galaxy, or by a rash of exploding stars formed around a million years ago.

ARTIFICIAL ORGANS – BETTER THAN LIFE?

Organ transplants may soon be possible with artificial versions of the squishy blobby bits that we all have inside us. The first artificial heart was designed in 1982, and kept its recipient alive for 118 days (but required a pneumatic pump the size of a fridge). But recent versions have been much smaller, with a pump that fits next to the stomach, and batteries that can be worn on a belt-pack. Scientists are developing artificial lungs, livers and kidneys. Although they are still being tested, it's hoped that they'll be available by the very end of the century, making donor cards a thing of the past.

WATCH OUT, THERE'S A VIRUS ABOUT

AOL4FREE is a 'Trojan Horse' program currently doing the rounds on the Net. But unlike the earlier Mac-specific AOL4FREE, this one doesn't give you a free account on AOL. Instead, it wipes your hard drive, and writes obscene messages to your screen. So, if you're stupid enough to try running the program, you might be able to rescue some of your files by hitting [Ctrl] + [C] immediately. AOL4FREE is the first such Trojan Horse to be honoured with a press release from the US Department of Energy.



During the day Rob delivers small packages via motorcycle. In the evenings he delivers a devastating payload via twin Pratt and Whitney F119-PW-100 turbofans

iF-22 Raptor. An airforce of one.

Experience the extremes - the ultimate fighter in the definitive sim.

Unleash the lethal power and devastating arsenal of the most advanced combat aircraft ever to leave the runway. Shatter the silence of quarter of a million square miles in a 3D world of mountains, valleys and omnipresent danger. Nothing else delivers the same rush.

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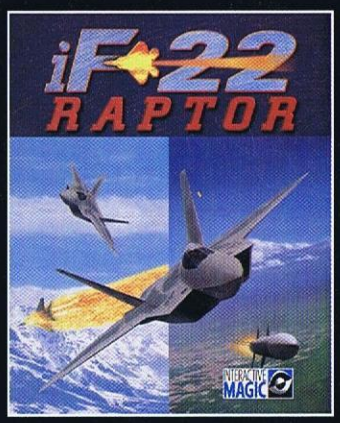

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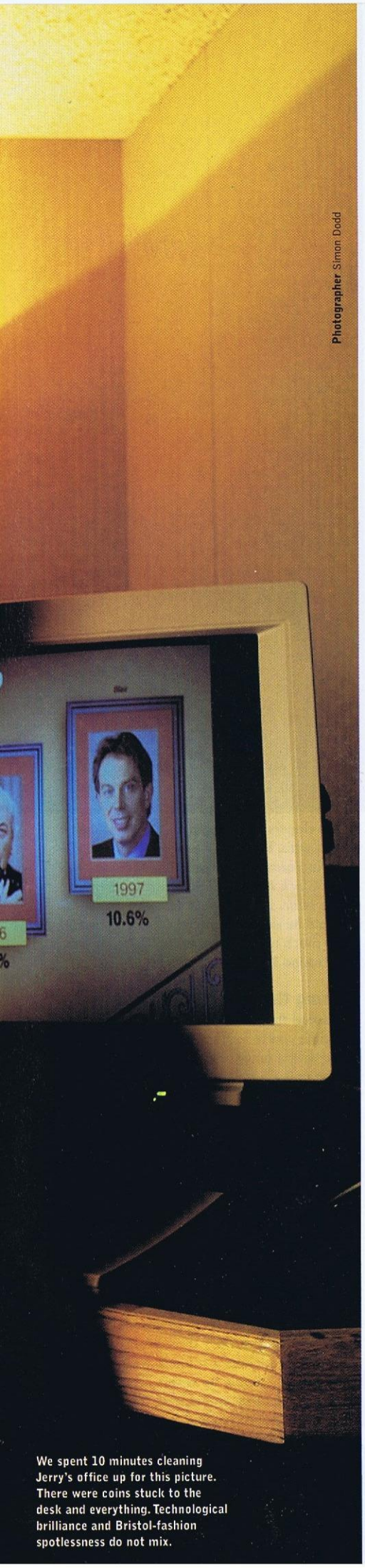
"Peter Snow likes a bit of amusement in his graphics and people do tend to remember them"

Jerry Clark



Photographer Simon Dodd

We spent 10 minutes cleaning Jerry's office up for this picture. There were coins stuck to the desk and everything. Technological brilliance and Bristol-fashion spotlessness do not mix.

THE *PC FORMAT* INTERVIEW

ELECTION NIGHT SPECIALIST

Without Jerry Clark, the news would be flat and dull, made out of cardboard and sticky tape. **Jim McCauley** speaks to Jerry Clark the BBC's 3D computer graphics maestro.

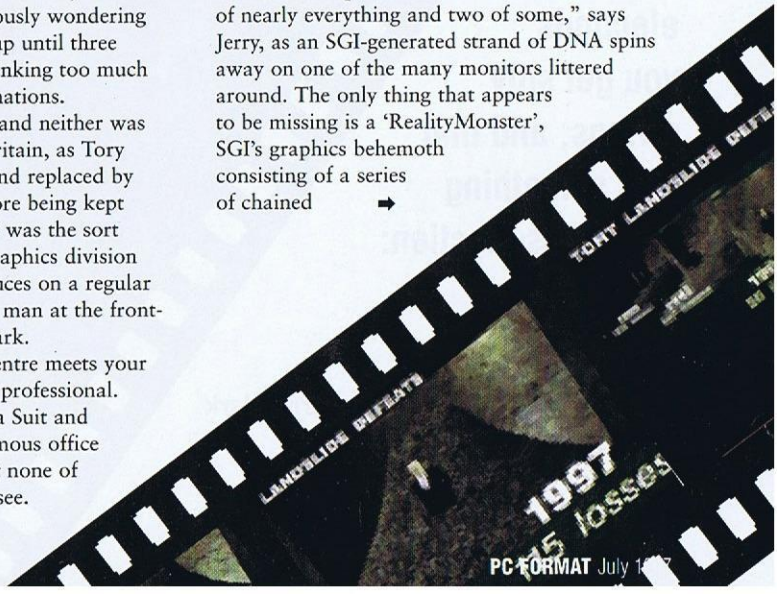
IT'S ALL YESTERDAY'S NEWS NOW, BUT CAST your mind back to election night. Amid the excitement of the biggest landslide for 150 years, Peter Snow steps out in front of a giant screen and proceeds to demonstrate just how big this landslide is. Before your eyes, a selection of prime ministers stand in front of cliffs and are unceremoniously buried under piles of rubble, getting bigger and bigger until we come to John Major, who is swamped right up to his neck. Yes, it's a big landslide, conclude millions of viewers, simultaneously wondering if the combination of staying up until three o'clock in the morning and drinking too much coffee really can cause hallucinations.

It wasn't an hallucination and neither was the virtual strafing run over Britain, as Tory strongholds were shot down and replaced by Labour fortresses, with the score being kept as in an arcade game. No, this was the sort of thing that the Computer Graphics division of BBC News Resources produces on a regular basis, and we're talking to the man at the front-line of broadcast 3D, Jerry Clark.

Reception at Television Centre meets your expectations – swish, pristine, professional. We're expecting to be met by a Suit and whisked away to some anonymous office cubicle. Suits come and go but none of them is the Suit we're here to see. Then an apparition in a sub-Hawaiian shirt and sandals ambles down the stairs – it could only be a programmer. "Hi, I'm Jerry."

Silicon labyrinth

A guided tour through the labyrinth that is Television Centre follows and we arrive at an office in such a mess that it's almost comparable to a teenager's bedroom or the *PC FORMAT* office on a particularly tidy day. The only difference is that this mess comprises mostly of Silicon Graphics hardware. "We've got one of nearly everything and two of some," says Jerry, as an SGI-generated strand of DNA spins away on one of the many monitors littered around. The only thing that appears to be missing is a 'RealityMonster', SGI's graphics behemoth consisting of a series of chained ➡



➡ InfiniteReality machines. "It's a dream," he says, evidently excited at the prospect of having so much raw processing power at his fingertips, "I'd just like to get my hands on one InfiniteReality."

With the sort of work Jerry's department is capable of, you can understand why so much heavy-duty hardware is at hand. This is the kit that produced the virtual newsroom – you can't have missed the fact that when you watch the BBC news, most of the impressive set (big glass sculpture and a large proportion of the enormous curving desk) simply doesn't exist in the real world. "In effect the physical studio we've got now is like a small version of what you see – the presenter's desk really does exist. We extend it virtually to make it look a lot bigger than it actually is."

"The set itself does exist, the background behind the presenter does exist. Sometimes you see the real thing, sometimes it's a keyed image you see, depending on the shot." If you've ever wondered why the BBC has opted for a VR newsroom, it's got nothing to do with showing off the technology. It's just economics: "A virtual studio in news terms is far cheaper. You only have to have one physical set of space, and you can make it look like anything. The idea of virtual stuff is that we can change it very quickly. We can use the same studio for the news broadcasts at Breakfast, One, Six and Nine o'clock. It's changed within seconds, whereas before you'd have two hours of scene-shifting between the programmes."

The virtual House of Commons, with a sizeable Labour majority in place. Of course, this preview graphic for election night went a bit too far – no way was Labour going to get away with a majority quite that big...

Speed is a major factor in the success of the Computer Graphics department. "Most of the platforms we've got are very quick at modelling – that's just a function of modern CPUs. For example, if a plane were to go down now," the time, incidentally, is 11.15am, "we could have a 3D model and a few seconds of animation of a plane crashing into a mountain ready for one o'clock. It would be fairly rough and ready, not much detail on the ground, we may just have a fly-past of a 3D model and highlight an engine or whatever the theory is."

That's an hour and three-quarters to put together an animation that most PC developers would want at least a few days to deal with. But it gets better: "There would be an increasingly detailed animation on the *Six O'Clock News* and even further detailed on the *Nine*. If *Newsnight* was covering it, it would be even more detailed. It's down to 'How much time have you got?' We can turn jobs around fairly quickly."

This is the news. The big glass sculpture, the curvy desk, even the lighting gantry, none of it exists except in one of Jerry's enormous Silicon Graphics computers.

Viewing the votes

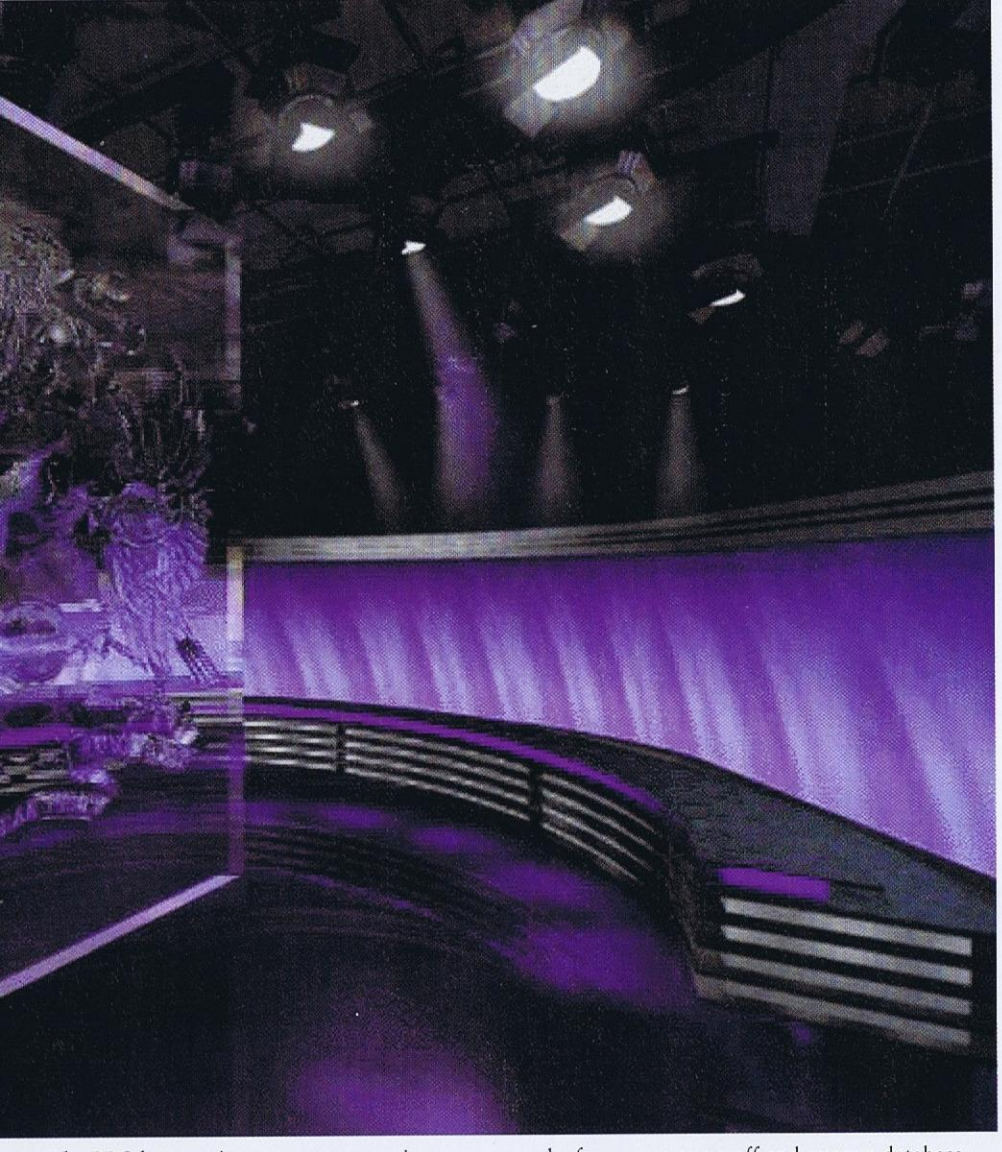
This speed thing is something to bear in mind next time you're seeing an item of news brought to life with a fancy animation. Not everything is done on such a fast turn-around, though. The General Election springs to mind – it's a major piece of news that you know is coming a long time in advance, giving you plenty of time to prepare. "What the BBC likes to do is have everything ready at least 12 months ahead of the maximum time. So we did a full-scale dress rehearsal with everything in the studio – the full set, absolutely everything as realistic as it could possibly be, and the only difference is the OB [Outside Broadcast] units are in the garage rather than out at counting stations. We did that 15 months ago. That was the culmination of about 18 months of work, so we actually started working on this project three years ago."

The result was a stunner, with results graphics coming up within seconds of the counts being announced. You might not appreciate just how much is going on behind the scenes, but Jerry does.

"In by-elections you get silly swings, and that was something about this Election: there were by-election swings"

Jerry Clark

Scenes from the Election: if you want to relive the swingometer, the Labour strafing run and those comedy landslides, you'll find them all on this month's CD-ROM.

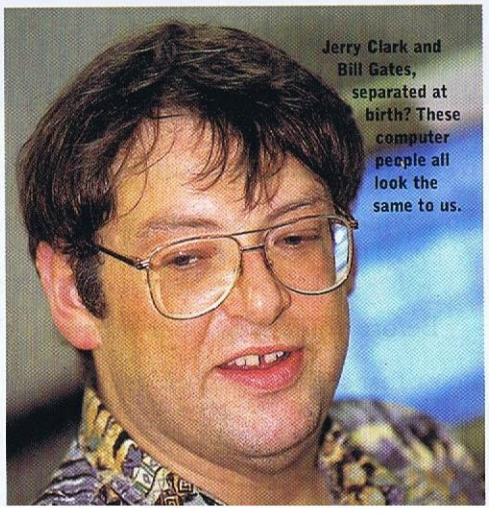


Another extract from our Election Night selection, lurking within this month's *PC FORMAT* disc. 'Call me' Tony reveals himself to be our third-youngest Prime Minister ever, after Pitt the Younger and, er, another bloke.

"The BBC has a stringer at every counting station. As the result is declared, the stringer is on the phone to an operator in the studio and as the results are read out they're typed into a central database system. One of the first things that gets triggered is a headline strap saying something like 'Labour Gain Exeter', or 'Con Hold Lichfield'. So you get a winner flag as soon as the winning party is declared, because the software is intelligent enough to figure '22,000, no-one else could come close.' A couple of seconds later the result is available to everyone."

Once the results were in, they followed two paths – to David Dimbleby for serious analysis and sensible graphs ("...what we call the Dimbleby graphics, which are the pure results"), and to Peter Snow for... if you were there then you'll understand. Along with the size of the Labour landslide, it was the Peter Snow effect that helped burn this election on our brains. Crazy animations, the swingometer, the virtual 10 Downing Street... All guaranteed to perk you up should your attention start to waiver.

The mind behind the madness was Peter Snow's. "Peter Snow likes to have a lot of control. We do nothing. The Snow machine has a local database, so we get a feed of raw votes from the VAX. Snow's graphics cover all sorts of statistics and you don't want to interrupt the frame rate or go off and query a database. On the night we did nothing except sit there nervously, waiting for something to go wrong."



Jerry Clark and Bill Gates, separated at birth? These computer people all look the same to us.

Practise makes perfect

It was a huge victory with an unprecedented Labour majority. Were Jerry and his team prepared for quite how large it was going to be? "Yes and no. We had rehearsals and rehearsed everything from an increased Tory majority to a Labour landslide. The landslide we rehearsed gave Labour a 130 majority and everybody thought this was wild! We were expecting a Labour majority and we rehearsed as many scenarios as we thought possible, but this was too extreme." Were they worried that the swingometer would break under the strain? "No, because it's the same code as we use in by-elections and there was one by-election where there was a 28 percent swing. In by-elections you get silly swings, and that was something about this Election: there were by-election swings."

Hang on a minute, haven't we seen something like this before? *The Day Today*, a spoof news show from a few years back springs to mind. Has Christopher Morris changed the perception of news graphics to such an extent that they've resorted to self-parody? "It's made people aware of the sort of graphics that are coming out of the news. I thought *The Day Today* was a superb, accurate piss-taking of some of the things that are going on. There was a lot more money being spent per graphic on that programme than any graphic they had on the news, I would say. Peter Snow likes a bit of amusement in his graphics and people do tend to remember them."

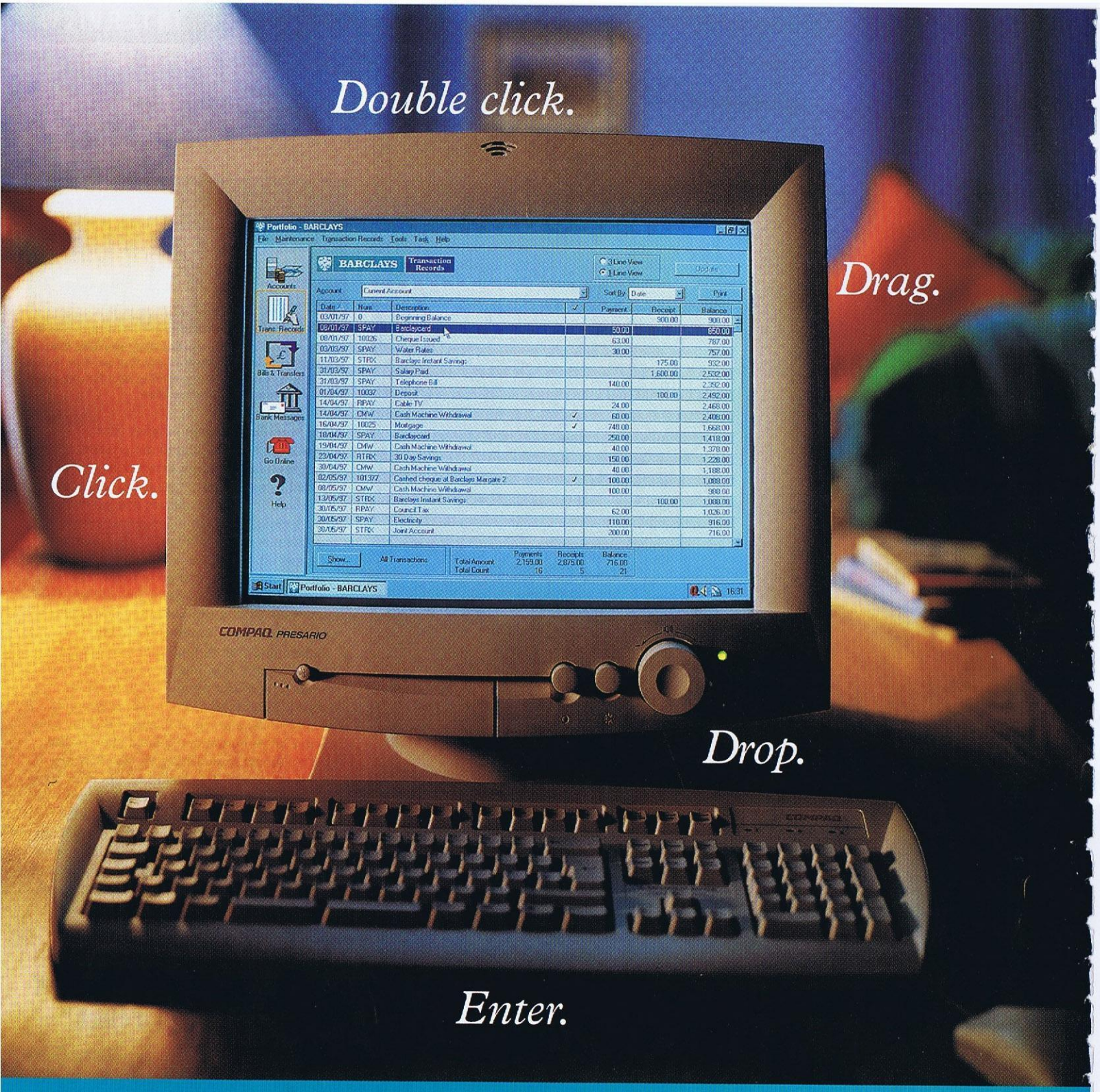
Among all the SGI machines we can see a couple of real PCs, but they're used for more mundane tasks like e-mail. "It's difficult to translate PC graphics into broadcast graphics because of the aliasing problems. The BBC likes to have all its output anti-aliased and this can be a nightmare, transferring PC graphics to a broadcast system. It's possible to anti-alias output from a PC, but it's generally software specifically designed to produce anti-aliased output." There seems to be another use though – one of them has a *Doom 2* icon on-screen, and Jerry admits that there was a problem with staff crippling the network with deathmatches, until it was stamped on from a very great height.

"We could have a 3D model and a few seconds of animation of a plane crashing into a mountain ready for one o'clock"

Jerry Clark

Maybe Jerry has a PC at home? "I have an Acorn RISC PC – I like up-to-date technology! It runs Acorn's RISCOS OS. I've got two processors – a Strongarm running the Acorn stuff and a Pentium secondary processor should I want to use Windows, and I can run Windows inside a RISCOS window should I ever want to." You get the idea he doesn't really want to, though.

Given his work combining politics and flash graphics, there's one thing we have to know – if Jerry were to give all this up and turn politics into a PC game, what would it look like? "You can almost liken it to something like *Dune*." *Dune?* Everyone plays *Command and Conquer* these days, you know. "I got *Command and Conquer* and didn't get into it. It seemed to be too difficult – just a load of blokes legging it around and getting blown up." It's nice to know that although he can knock up a virtual plane crash or a silicon landslide in a couple of hours, Jerry Clark really is human after all. PCF



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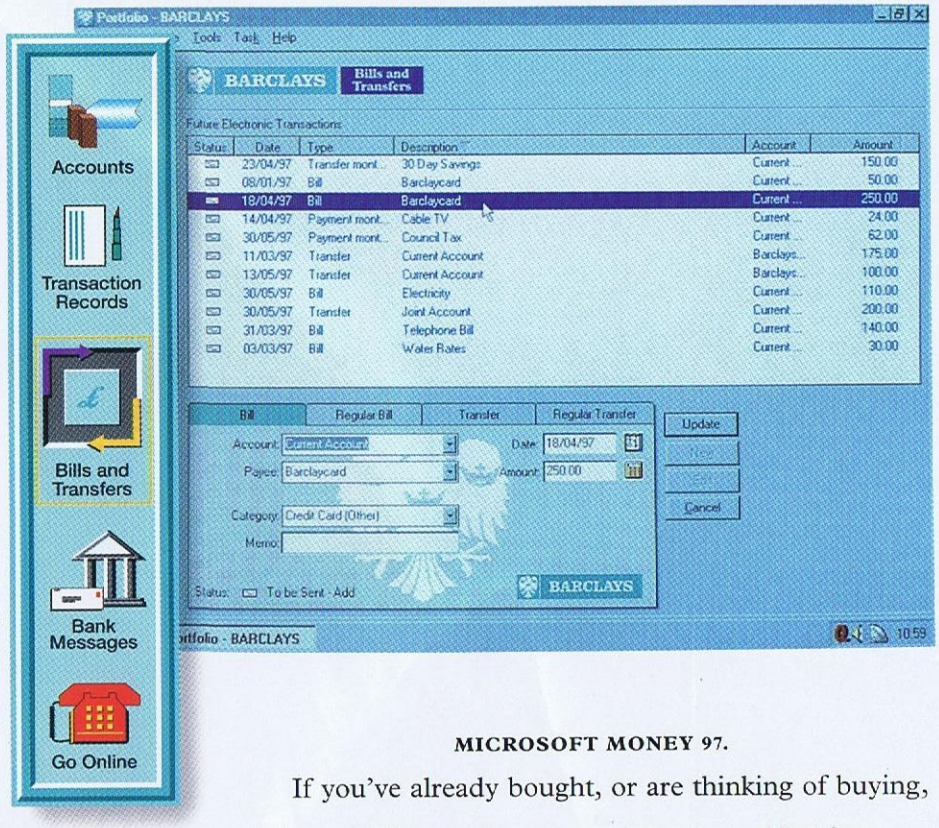

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A plethora of 3D graphics so sharp you'd cut yourself on them is about to hit your PC. Join us over the next eight pages as we introduce the hot engines, the key players and the secrets of doing it yourself. Then turn to page 106 for our definitive group test of 3D accelerator cards. She's gotta have it... and so have you.

CUTTING EDGE 3D

Virtual Reality may be dead and buried but 3D is still going strong. Prepare to orbit the new 3D worlds in the PC galaxy with **Jim McCauley** at the helm.

REMEMBER THE DAYS WHEN WE ALL thought that virtual reality was the future? Everyone was going to be immersing themselves in full-on 3D universes, with the ability to interact with everything. You could even indulge in (snigger) cybersex with artificial members of the opposite sex (or the same sex if you preferred). It was a fabulous future to look forward to – forget about real life and plug yourself into cyberspace.

Unfortunately, the future rarely turns out to be as bright as it's been painted. Virtual reality was great in theory, but in practice it was wont to lurk in the dizzy depths of mediocrity. For starters, the only way to immerse yourself in VR was by strapping into an enormous helmet that weighed a ton. A pair of tiny low-res screens simulated (provided you could actually focus on them) a 3D view that, if you saw the real world in that much detail, would entitle you to declare yourself legally blind. Assuming your neck muscles managed to hold out for any length of time and you could stay focused on the fuzzy 3D image, you then had the delights of nausea to look forward to as your eyes and ears sent completely conflicting messages to your brain. Sounds like a lot of fun.

Virtual reality was great in theory, but in practice it was wont to lurk in the dizzy depths of mediocrity

Add to all that the processing power required to generate two separate 3D images (usually the best way was to pump out images of half the quality) and the enormous cost of actually buying one of these horrible helmets (or face suckers, as those in the trade liked to refer to them) and it's no surprise to learn that virtual reality has died a very real death. Indeed, its pioneer, Virtuality, was recently declared insolvent with debts of more than £7 million. It seems that the only future for VR is in high-end imaging applications for the medical profession and the military – it's just not feasible for the home.

Being there?

Before you start weeping copiously for the death of VR, put your tissues aside and ask yourself this – are you really going to miss it? Really? When you consider the wonders that your PC can generate without the intervention of some neck-breaking piece of headache-inducing hardware, why would you want VR? An unaccelerated PC can produce startling 3D worlds as seen in *Quake* and the forthcoming *Hexen 2*, and with the addition of a 3D card it's capable of genuinely stunning results – fast, high-res graphics with all the mip-mapping, lens flare and dynamic lighting you'll ever want.

A 3D card might still seem like a frivolous addition to your PC, but that's all about to ➡

Cover Photo Robert Smith Studios

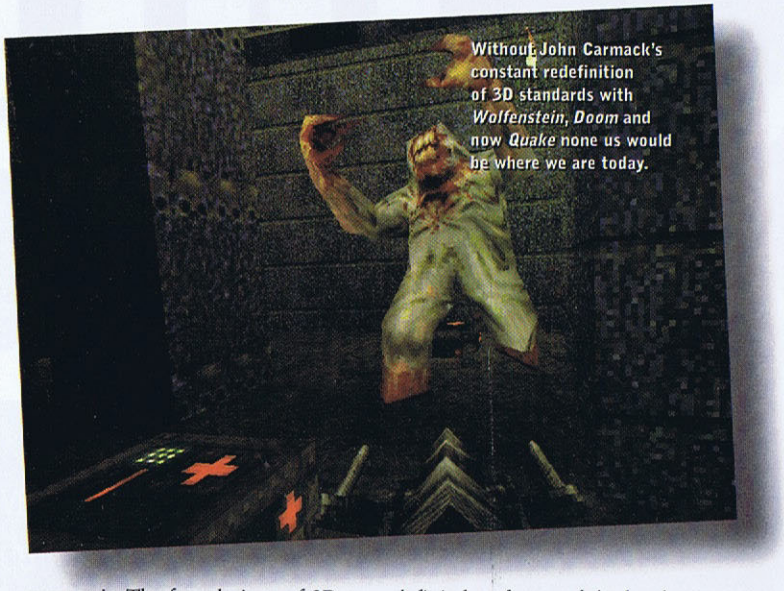
➡ change. A wave of games that positively requires 3D acceleration is just about to break, and any PC that doesn't pack the necessary hardware will be washed away on a tide of two-dimensional flotsam and jetsam. If you want to enjoy either of the two most eagerly awaited new 3D games, Epic's *Unreal* or 3D Realms' *Prey*, in their intended 16-bit colour, you simply have to have a 3D card.

This month *PC FORMAT* is opening up the whole 3D world. We look at the eye-melting games that are coming your way over the next year including *Quake 2*, and delve deep within the most important aspect of a great 3D game – the engine responsible for throwing all those texture-mapped polygons in your face. We go behind the scenes of *Hexen 2* – the sequel to *Hexen* and the first third-party game to use Id Software's *Quake* engine. If you're tempted to have a crack at creating your own 3D games, we show you the basics of building your own levels for *Quake*. It's easier than you think.

Once everyone's managed to catch up with the *Quake* engine, what will come next? We close up by looking forward to life after *Quake*, show you where to go on the Web for all your 3D needs, and take a peek at the sort of technology you'll have on your desktop in a few years' time. Who knows, maybe one day we'll be able to give virtual reality another go...

GENTLEMEN, START YOUR ENGINES!

The monsters, the action, the ambience. They're the bodywork but you wouldn't give them a second glance if the engine wasn't up to scratch.



Without John Carmack's constant redefinition of 3D standards with *Wolfenstein*, *Doom* and now *Quake* none us would be where we are today.

SORRY, BUT WE'RE GOING TO have to throw a dull word at you here: mathematics. All of you who struggled through GCSE maths (or O-level maths if you're from more enlightened times), think again if you're planning on creating your own 3D games from the ground up. Every 3D engine has its basis in mathematics and geometry, because no matter how many textures, sprites and light sources go into the finished product, everything starts with the generation of lots of lines and polygons.

Still, once the wireframe 3D is in place, everything else follows as long as the hardware is there to support it. The foundations of 3D games engines were laid back in 1980 with Atari's *BattleZone*, and you can plot a line from that old man of the gaming world through to today's hot properties such as *Quake*. *BattleZone* presented a world made entirely of polygons – *Quake* does the same, only it's more refined because the hardware and engine are more sophisticated.

The main goal in 3D programming is to create as realistic a game world as possible and that is quite definitely a factor of the hardware available. It's a small step from the basic vector graphics of *BattleZone* to more advanced vectors, with different colours and hidden line removal to create an extra illusion of solidity. Similarly, the move from plain wireframe 3D to filled polygons is more a quantum leap than a massive advance – once you're calculating the dimensions of your polygons accurately, the only thing to stop you filling them is because it takes a lot more processing time.

3D – THE NEXT GENERATION *Quake* beaters? We've got them in spades

Daikatana

EIDOS/Ion Storm Expected Autumn 1997

John Romero's next big game takes the latest version of the *Quake* engine and bends it into a time-travelling RPG with plenty of bloody action. *Daikatana* gives you the advantage of two AI compadres playing alongside you, as well as a power-up system based on gaining experience points. If any third-party developer can make the most of the *Quake* engine it's Romero's Ion Storm – watch out for *Daikatana* later this year.

Unreal

GT Interactive/Epic Megagames Expected Autumn 1997

If things go well, *Unreal* is going to be the one of the first *Quake*-beaters to hit the stores. Boasting everything that *Quake* has, plus 16-bit and 24-bit colour and dynamic, coloured lighting, the only thing that *Unreal* has going against it is that it'll require more power to run properly than *Quake*. Start saving up for more memory, a meatier processor, a faster video card and a 3D card for good measure.

SiN

Activision/Hipnotic Expected early 1998

Hipnotic has already worked wonders with the *Quake* engine, in its Id-endorsed mission pack, *Scourge of Armagon*, and it now has its own game in the works, again based on the *Quake* engine. Expect nothing short of brilliance – *Armagon* amazed with its imaginative level design and environmental traps. With the whole of the *Quake* engine at its disposal, the Hipnotic crew should be able to wring even more excellence out of it.

Quake 2

Id Expected December 1997

Id is remaining utterly tight-lipped about *Quake 2*, but we've managed to acquire a few details and screenshots. John Carmack is working on a unified executable so that *Quake 2* automatically detects if you have any 3D acceleration and then uses it, and the look is nothing like *Quake*. Gone are the mediaeval levels – everything is futuristic and pre-recorded files can be spliced into the game to provide cut scenes. We can't wait.

THE BRAINS BEHIND *UNREAL*

How do you beat *Quake?* Tim Sweeney from Epic Megagames is trying to do just that, so who better to ask?

What does the *Unreal* engine do better than the *Quake* engine?
The move to 16-bit colour gives *Unreal* a lot of added realism and graphical variety; textures can contain a wider range of hues and lights can be coloured. On the AI front, the new monsters that Steven Polge (inventor of the Reaper Bot for *Quake*) has programmed are very challenging in an intelligent way; rather than attacking you with brute force, they try to gang up and attack you in groups, sneak up behind you, or follow you through a level.

What sort of platform is *Unreal* going to need? Is a 3D card a necessity?
We're aiming for the high end: our recommended system is a P133 or faster, and the ideal system is a Pentium MMX with a fast 3D card like a 3DFX.

How many polygons is the engine capable of throwing around simultaneously?
Including monsters, a couple of thousand, and that's not a lot. We put as much of the detail as possible into our textures and lighting, rather than pumping up the polygon counts.

Are you using 'real' dynamic lighting as opposed to *Quake's?* How much more load does this put on the CPU?
Unreal's lighting is fully dynamic, meaning that every light in a scene can smoothly fluctuate without much of a performance hit. This makes rendering static scenes slower than, for example, *Quake,* but greatly speeds up dynamic scenes, which is what we want. Lighting is the single most important visual cue in a game.

What sort of maths are involved in putting together a killer 3D engine?
With a few exceptions, the mathematics in *Unreal* is simple, high-school level stuff. The complexity reveals itself in the algorithms that piece together complex scenes quickly.

What do you think is the next step for 3D engines? More to the point, how would you try to get ahead of John Carmack's Trinity engine?
Seeing that the state of art computer graphics in 1997 falls short of what the human visual system is able to perceive, by a factor of perhaps 100,000,000, I think there is plenty of unique territory for all 3D programmers to explore.

Filled polygons never really made a worthwhile impression until 16-bit computers appeared, with the likes of *Starglider* and *Virus* (AKA *Zarch*). Attempts at filled 3D had appeared on 8-bit machines *(The Sentinel, Driller, I of the Mask)* but the demands that they made on the clunky old hardware meant games with a screen update rate more akin to a slideshow.

Smoothing on up

Polygons have become more and more sophisticated, with shading methods improving. Flat shading results in an angular look, so the next step is towards Gouraud shading and Phong shading, where every part of every polygon is individually coloured with varying degrees of sophistication. However this is a highly processor-intensive job, making a fast game shaded in such a way a difficult task to achieve, so programmers have got around it by cheating. *Wolfenstein 3D* was the first notable example of this, with a polygon engine supplying the 3D world, while everything else was done via flat, sprite graphics. *Doom* went one better, generated through texture-mapped polygons – impressive to look at but avoiding the slowdown of complicated shading techniques, and the characters still sprite-based.

Quake and its up-and-coming offspring and pretenders are using polygons almost exclusively, still texture-mapped but with realism courtesy of dynamic lighting. But programmers are cheating – true dynamic lighting requires more processing power and maths, so Id's John Carmack devised a way to achieve this without the pain. *Quake* makes an approximation of light values by surrounding light entities with a 'globe' of light. Wherever this globe passes through a wall or entity, it lights up the area. The payoff is in the speed at which *Quake* runs. We've yet to see a game in this style that both uses dynamic lighting and runs at a good pace, even on a monster PC.

The main goal in 3D programming is to create as realistic a game world as possible

HISTORY OF 3D GAMES

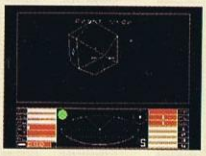
From frames to worlds in eight episodes...

BattleZone

Atari's tank battle game might look awful, but it was stunning in 1980. Its first-person perspective was conveyed through vector graphics, with colour courtesy of acetate overlays on the screen. The gameplay was basic, the controls unwieldy, but it was genuine 3D and the crowds lapped it up. Rumour has it (and still no-one's certain on this) that the US Army was so impressed by *BattleZone* that it contracted Atari to produce a top-secret version for training purposes. No-one's ever seen one of these Army *BattleZone* machines and neither Atari nor the Army will confirm or deny it, but there's plenty of evidence that this did really happen.

Elite

The BBC Micro was great for programming in Logo but useless for decent games, until *Elite* turned up. It grabbed everyone's attention with its depiction of planets, spaceships and space stations, rendered in wireframe 3D, with everything given a dose of reality with a hefty dollop of hidden line removal. The 3D was fast, the action hot, the game utterly compelling and for some reason David Braben has yet to do it better, even though the technology has moved on generations.



Prey

3D Realms Expected mid-1998

As with *Unreal, Prey* promises a whole pile of incredible 3D effects and is going to require a 3D card to get any sort of performance out of them. Indeed, 3D Realms is counting on everyone having a 3D card by the time *Prey* is released. The engine itself is more or less done so now it's a case of building a game around it – we already know that the hero of the game is called Talon Brave, but anything more than that is pretty unclear.

Duke Nukem Forever

3D Realms Expected late 1997

The surprise of the year came recently when 3D Realms announced that it had licensed the latest version of the *Quake* engine for its next instalment of the *Duke Nukem* saga. However, given the fact that the *Prey* engine is still in development, it makes sense to get a game out that doesn't rely on the Build engine, which is more than showing its age. We're counting on *Quake* loveliness and *Duke* gaudiness, with a sprinkling of humour.

Jedi Knight

VIE/LucasArts Expected soon

Take one *Quake*-style 3D engine, heavy on the polygons and boasting the features that up until now have been *Quake's,* and *Quake's* alone and then pour the *Star Wars* dressing over it. *Dark Forces* fans will be delighted to learn that *Jedi Knight* has the long-awaited multiplayer mode, and it enables you to learn the ways of The Force and get your hands on a light sabre. *Star Wars* fans will adore it, as will anyone else with a taste for a blast.

Deathtrap Dungeon

EIDOS Expected soon

Based on Ian Livingstone's *Fighting Fantasy* series of books, *Deathtrap Dungeon* is already late but looks like the wait will have been worth it. Bags of polygons, dynamic lighting and one of those intelligent roving cameras mean that *Deathtrap Dungeon* is looking likely to be another *Tomb Raider* for EIDOS, and with its roots entrenched in the RPG world it's going to have a whole lot more depth to it than Lara's cleavage.

The level of detail in *Hexen 2* is absolutely astounding... but the payoff is slightly slower action than in *Quake*.

THE MAKING OF HEXEN 2

Raven developed *Heretic*, the first third-party game to use the *Doom* engine. Which softie is behind the first third-party *Quake*-based game?

WAS *QUAKE* TOO GUNG HO FOR you? Chances are that you're awaiting *Hexen 2* then. Raven, the company that took the *Doom* engine to new heights with *Heretic* and *Hexen*, is about to work wonders on the *Quake* engine with *Hexen 2*. With the gameplay and the depth brought to proceedings by RPG elements, you can rest assured that *Hexen 2* is going to give as much exercise to your brain as to your trigger finger.

As with *Hexen*, you're given a choice of four character classes:

QUOTH THE RAVEN

PCF quizzed producer, Brian Raffel, on the making of *Hexen 2*

When did *Hexen 2* start?

"We started working on *Hexen 2* a little under a year ago. *Quake* was in its finishing stages and we were all just blown away. I can remember seeing it for the first time and thinking about all of the cool things that we could do with the technology. Since then, the bulk of the development schedule has been focused towards getting up to speed with all of the new technology. It was quite a shift moving from a fake, sprite-based, world into a fully 3D poly-based setting.

Any new tricks to expect?

We are constantly trying to work new things into the game. We have rotating walls and door, smashable architecture translucent monsters and effects, real-time scaling polygons and some great weapon effects. We've also added some really impressive environmental effects, such as earthquakes and dripping water/rain. We've even added translucency to windows, so when you smash them open, you'll already know what is on the other side.

Do you miss sprites?

You always begin a game with as many ideas as you can possibly think of. As time progresses, you realise that some things are impossible to do and you get over it. When we were first puzzling over the technology, we were constantly wishing that we could use sprites. They just seemed to look better to us and we were getting disappointed with how things had started to look. We realised that we had to use polys, and we ended up making some really cool weapons.

Any major problems?

The biggest problem was getting around the learning curve. We had the *Doom* technology down to a science, but this was an entirely new world. We were first given the *Quake* technology as *Quake* was nearing completion. Because of this, we were pretty much on our own in figuring it out. It was quite a ride, but eventually we figured everything out and got it to a point where we felt comfortable. We made changes to suit and set up our own structures.

Necromancer, Crusader, Assassin and Paladin, each with their own powers and motives. As they progress through the game they gain experience and so their powers increase, up to the point where they're wielding an awesome amount of firepower – a charged Necromancer can re-animate the corpses of monsters and send them into battle on his behalf.

Another feature that *Hexen 2* shares with its predecessor is the layout of the levels. *Hexen 2* offers a number of Hub levels from where you can access a number of other levels and travel between them when necessary. The concept didn't prove massively popular in the original, but Raven has been working on it to make things less confusing.

Yeah, yeah

But enough of the gameplay for now – we told you almost all you need to know last month. What you need to know about is the sort of work that's gone into squeezing every drop of gorgeousness from the *Quake* engine. Quite simply, Raven has been doing so much to create a realistic game world that there have been questions asked about whether the average PC will be able to cope.

And to be sure, there is a whole lot going on in *Hexen 2* that you've never seen before, including additions to the *Quake* engine and elements from the *Quake 2* engine. Some of *H2's* features are taken straight from the original – the most obvious is the inclusion of stained glass windows that can be smashed with your weapon. There's more to those windows than smashability though – new lighting effects have been brought in, courtesy of a tool called QRAD that adds light radiance to levels. So those windows will look less like multi-coloured panels and more like stained glass as found in your local church.

Say hello to the Paladin. A personage of noble rank and title. And a six-foot sword.

To add to the real-world effect of *Hexen 2*, Raven has spent time digesting innumerable architecture books and learning the ins and outs of real-life architecture. The result is a game filled with temples, cathedrals and pyramids that – but for the fact that they only exist on a PC and they're filled with other-worldly monsters – could be the real thing. The shapes and details are just right. A gorgeous example can be found within the Egyptian levels – an enormous statue. Run this in GLQuake mode and you'll have something to make most Egyptologists salivate.

Could it be that Brian Blessed has at last found other work that involves less shouting?

The population of *Hexen 2* is being built with the care. Raven's Brian Raffel says: "We want to make the monsters in *Hexen 2* unique. We're texturing the faces of the monsters instead of layering elements from different faces like the technique we used to create some of the *Quake* monsters. We've further distinguished the creatures by giving each of them carefully chosen, subtle movements. These monsters move at 20 fps, as opposed to the 10 fps in *Quake*."

You'll also find a host of other new touches in *Hexen 2* including transparent polygons for ghosted images, dynamically scaling polygons so that characters can shrink/grow and rotating brushes, as seen in Hipnotic's *Scourge of Armagon*. *Hexen 2* is shaping up to be something to stamp on *Quake's* toes and make sure that Id pulls out all the stops for *Quake 2*.

HISTORY OF 3D GAMES

The Sentinel

Pushing the 8-bit computer to its limits, Geoff Crammond's *The Sentinel* did the unthinkable – it generated filled, colour polygon graphics and made a game around them. Sort of. *The Sentinel* was a great game, but speed was not its major selling point. Set on a multi-layered chessboard, you moved from square to square and the act took a few seconds as the PC redrew your view. Once the view was drawn you could pan it around quickly enough, looking for trees to absorb and trying to make your way to the top of the world, and things did become frantic despite its pace. *The Sentinel* was a one-off and we're certain that people are still playing it today – it was utterly vast and utterly addictive.

Driller

Another 8-bit game to feature filled polygon graphics, *Driller* was lauded by the *cognoscenti* because it was an action game set in a solid 3D world. Unfortunately everyone seemed to overlook the fact that *Driller* was slow – as with *The Sentinel*, the screen took seconds to redraw, but in the case of *Driller* it just made the game painfully slow and tortuous to play. It was an attempt to push the limits of 3D gaming, but in the end *Driller* had bitten off far more than it could chew, and although the programmers managed to eke out tiny speed increases in subsequent games, the pace never got above pedestrian. Now you could play it on a speeded up Spectrum emulator...

Didn't Id help you out?

With the other projects that we had done with Id, we always had a person there who was a direct link between Id and Raven. When John Romero started his own company, that disappeared. Id was busy on its own projects and we didn't want to pester anyone too much, so we basically hacked it out on our own. When we first started creating the game, we figured out what sort of machine we would be aiming for and we went from there.

Is Id happy with *Hexen 2?*

We didn't really hear all that much from John (Carmack) until a little while ago. They are all busy with their own stuff, and they hadn't been keeping up with what we were doing. John didn't like where our progress was and he flew up to Madison, we talked things over and reset our development schedule. John has been helpful about answering questions, he's a great guy. What can I say, without him we wouldn't have any of this stuff. It's amazing what he can do.

What's Raven's secret?

We have a philosophy at Raven when it comes to making games: we create games that we enjoy playing. We won't release a game with which we aren't happy. I think that there are some companies that are just putting things out to get them out. Don't get me wrong, we make games as a way to support ourselves and we want them to sell well, but at the same time we have to be happy with them. The most important thing in designing a game is to make sure it is fun.

And life after *Hexen 2?*

We have been working in crunch mode for longer than I care to remember. Project-wise though, it's up in the air. We love working with Id, they are a great bunch of guys and we would love to do another project with them but we just have to wait and see.
I think that if we do happen to do another *Quake* engine game, we would really be able to cook. We've gotten the learning curve out of the way and everything that we did would really be great."

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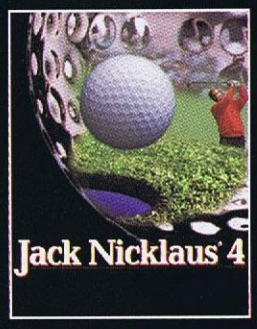

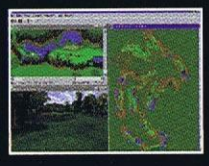

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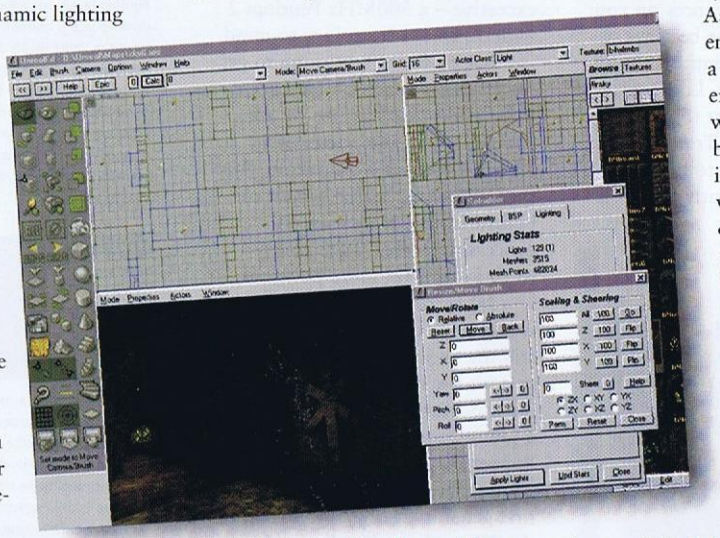
DO IT YOURSELF

Quake and its ilk are so big and complicated that you might as well forget about trying to make your own levels, right? Wrong.

THERE WAS A TIME WHEN THE world, his wife and his dog were hard at work making their own *Doom* levels. That was then and this is now, and the now in question is a now of *Quake*, of true 3D levels, dynamic lighting and polygons. Surely generating such a level at home is going to be hideously difficult task?

Of course it isn't. In fact, making your own *Quake* is, dare we say it, easier than making a *Doom* level because of the sheer brilliance of the architecture. A simple room can be created in under a minute and something a little more involved can be put together within a couple of hours, all due to *Quake's* use of brushes – solid blocks that you just stick together to make your levels. The better *Quake* editors come with a selection of ready-made brushes such as blocks, cones, wedges and even house shapes, and it's easy to carve chunks out of them to make just the shape you want.

Once you have the shape of your level, making it look good is just as straightforward. Textures can be applied to brushes with a few clicks of the mouse, and you can drop in entities such as monsters, weapons, slipgates and everything else just as easily. With all that in place there's nothing to stop you saving your level, compiling it into a proper *Quake* level and playing it, but you shouldn't be surprised when it looks nothing like as good as the proper levels. That's because you haven't lit it yet. As well as the normal entities, there are a number of light entities which, used wisely, can turn a bog-standard level into a spine-chilling world of fear. Work out which areas you want to be bathed in light and which ones should be swamped in murky darkness. Clever lighting makes all the difference, but it comes at a price – once all your lights are in, you'll find that your levels start taking longer and longer to compile, as your PC frantically works out the light values for your entire map. If you have a big level, be prepared to start compiling it when you go to bed, then get up the next morning and find that it still hasn't finished.



If you like *Quake* editors then you'd love this application – Epic's *Unreal* tool with a what-you-see-is-what-you-get view!

HISTORY OF 3D GAMES

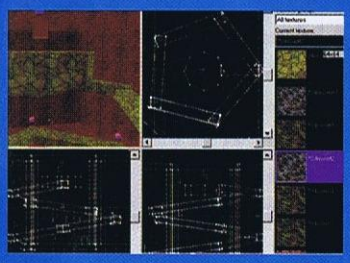
Starglider

Two games helped to make 16-bit computers sexy. *Defender of the Crown* was the world's first interactive movie, all gorgeous visuals but not much up top, while *Starglider* was an enormous space combat/flight sim with colourful filled polygons oozing loveliness. You could fly through space, fly down onto planets, fly through underground tunnels, all the while having your eyeballs bathed in wondrous 16-bit 3D. Created by Argonaut Software (who funnily enough started out as Realtime Software with a *BattleZone* clone on the Spectrum), *Starglider* instantly became the new benchmark for 3D games and went on form the basis of *StarWing* on the Super Nintendo. And what's coming out soon for the hottest new console around? *StarWing* (or possibly *StarFox) 64* for the Nintendo 64 – few games have managed to last this long.

Wolfenstein 3D

And then Id Software happened. With *Wolfenstein 3D,* Id combined filled polygons with sprites to create a then-amazing 3D world on the humble 286. In retrospect it looks utterly awful and even playing it now is a painful experience, but at the time it was the ultimate in 3D immersion. For the first time ever you were dropped into the middle of a fast-moving, colourful 3D environment, looking down the barrel of your pistol at wave after wave of Nazi soldiers out for your blood, while you went after Hitler's. For a brief time *Wolfenstein* ruled the world, and Id Software was the bright new hope of the PC gaming industry. No-one believed for a second that things could become any more realistic in the PC games world...

BUILDER'S TOOLS Make your own *Quake* with these handy applications



WorldCraft

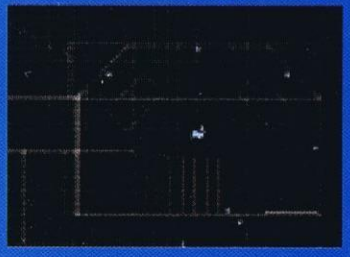
http://www.gamecraft.com/

The undisputed King of the level editors, *WorldCraft* enables you to do just about everything that Id's own utilities are capable of. Brushes can be created, rotated, scaled, hollowed, flipped and carved, and you can view the progress of your model in gorgeous, texture-mapped 3D. Even better, you can lay your hands on prefab libraries full of ready-made objects that can be dropped into your maps for that really professional look.

Qoole

http://www.qoole.com/

Still in beta but looking hopeful, *Qoole's* front end is a lot friendlier than *WorldCraft's* but it doesn't offer as many options for manipulating your brushes. If you're still stuck in DOS-land it should be your first choice – it's a very powerful 32-bit DOS4GW application, but it runs under Windows 95 just as well. We're waiting with bated breath for a non-beta version – some of the bugs in the betas have been completely maddening.



DeathMatch Maker

http://www.deathmatchmaker.com/

WorldCraft might rule, but *Deathmatch Maker* is the only level editor endorsed by Id and it has the benefit of being the easiest to use. Rather than build your own brushes, you need only select ready-made ones from the enormous library and then stick them together, rotating and scaling as you see fit. It's almost a *Quake* version of Lego, and it's perfect for those of you who can't be doing with the fiddly job of brush-building.

Thred

http://www.visi.com/~jlowell/thred/

Feted elsewhere, *Thred* doesn't excite us as much as any of the other editors. What it does have in its favour is built-in support for concave brushes (those that curve inwards or have holes in the middle), but the likes of *WorldCraft* and *Qoole* get around this by grouping brushes together, with the added advantage that you can ungroup them and apply individual textures. Still in beta, *Thred* just can't compete with the big boys.

SHAPING UP FOR THE FUTURE

Quake, Unreal, Prey – they might all be brilliant but essentially they're all the same. What will the next 3D generation look like?

EVER SINCE *BATTLEZONE* FIRST poked its turret into the arcades, the development of 3D has come in a series of leaps and bounds. Are there any more major developments to be made?

Well yes, but unfortunately you're unlikely to be able to run the fruits of such advances on your current PC. To get the best out of *Quake* you need a Pentium clocking into triple figures. Looking ahead, we reckon that to run Id's next major advance, Trinity as it's known, you're going to need something that currently seems excessive – a 300MHz Pentium 2 with 32 to 64Mb springs to mind.

But what are you going to get for all this power? It's only going to be a few years before we all have PCs with the power of a Silicon Graphics workstation. And then? Well, the major benefit to be had from any increase in processing power is the ability to chuck out yet more polygons.

3D cards are facilitating real-world effects already, but they're still the exception rather than the rule, so the majority of games are unfortunately still catering to a lower common denominator. Expect that to change soon enough, and then wait for the first generation of games that take the 3D cards to their limits. It's not going to be *that* long before you can expect 3D in games to be close to the sort of graphics coming out of Hollywood today. And then maybe technology will have caught up enough to make a decent home VR setup a reality. We can dream, can't we? PCF

SILICON MAGIC

The PC is a hot piece of 3D hardware when it's packing enough punch, but it's nothing compared to the choice of the 3D professionals. No question – if you want to create film or broadcast-quality 3D you'll have to dig very deep indeed and get yourself a Silicon Graphics machine. SGI hardware is used everywhere these days, from creating the dinosaurs in *Jurassic Park* and its sequel, *The Lost World,* through to the recent General Election coverage when we all delighted in the virtual landslide and the strafing run over Britain, with Tory strongholds being blown to bits and replaced with Labour towers (see out interview with Jerry Clark). For the ultimate in 3D you'll be wanting an Onyx2 RealityMonster with 16 4Mb cache R10000 processors and 8Gb RAM – it can pump out 80 million filled polygons per second. However, for those of you who don't have a multi-million pound budget, the O2 might be a better bet – from only £5,000 you still get stunning output compared to what your PC can do, all in a handy desktop model.

HISTORY OF 3D GAMES

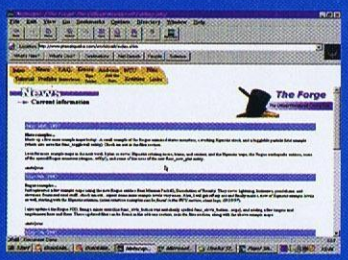
Doom

...until Id went one better and launched *Doom. Wolfenstein* had three major drawbacks in the realism stakes – the actual rooms had flat walls with only the occasional bit of detail in sprite form, everything was lit with exactly the same amount of light and the playing area was completely flat. *Doom* changed all that. Id brought texture mapping to the game world, resulting in detailed rooms with all manner of textures and designs on them. Extra tension was added with variable lighting levels, meaning that you might venture into a normal looking room, only to have the lights go off and all hell break loose, while an extra dimension was added in the form of multi-layered levels. Although the game was still built on 2D maps, clever planning meant that you could go up steps, drop out of windows and explore underground tunnels. *Doom* shook the world and it stayed shaken until...

Quake

At the time of writing, nothing has appeared to better Id's *Quake* engine. Eschewing sprites almost entirely (*Quake* still uses them for explosions), *Quake* is polygon-based and creates the most realistic 3D world yet seen. It's fast, fluid and believable. Monsters are made from 3D models with flat textures (skins) wrapped around them, the levels are built in true 3D and you can look around with freedom. Not only that, Id has included real-world physics, facilitating the art of rocket jumping – aim at the ground, fire and jump simultaneously and take advantage of the fact that every reaction has an equal and opposite reaction. So, what's going to beat *Quake?* The *Unreal* and *Prey* engines are looking good, but we're waiting to see what *Quake 2* has up its sleeves...

FURTHER READING The third dimension on the Net



The Forge

http://www.planetquake.com/worldcraft/index.shtm

Bitten by the *Quake* editing bug and want to do it properly? Then you'll need to use *Worldcraft,* and for the best advice on using it then The Forge is the only place to go. Formed recently as an amalgamation of other *Worldcraft* sites, The Forge contains absolutely everything you need to know about making the most of this top tool, including the latest news, FAQs and tutorials, plus prefabs for your own levels.

QuakeLab

http://207.230.228.198:80/stevefu/QuakeLab/

A more general editing site than The Forge, QuakeLab again features all that important help you need to move on from boxy levels to the sort of map you expect to find in a commercial mission pack. The very best thing about QuakeLab is a guide to making your levels play as well as possible, including hints for testing them properly and making sure they don't fall victim to slowdown because you've been over-ambitious in your design.

PreyStation

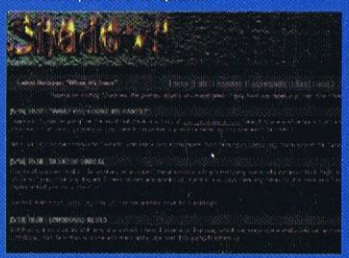
http://www.preystation.com/

If you think there might be more to life than *Quake* and want to know more about non-*Quake* 3D games on the way, there are a few places to look. Even for 3D Realms' *Prey,* which isn't going to be out for over a year, there's already an information site with the oh-so-amusing name of PreyStation. With not much to go on other than the occasional screenshot and hearsay it has its work cut out, but it's worth a look.

Shadows

http://www.shadows.co.uk/

The other big *Quake*-beater in the making, Epic Megagame's *Unreal,* is closer to release and has spawned more sites than *Prey.* Of the sites out there our favourite is Shadows, a veritable mine of news and info. It's slow at the time of writing because the author is doing his exams, but once they're out of the way you can confidently expect Shadows to be to *Unreal* what Blue's News, Impulse 1 and Stomped are to *Quake.*



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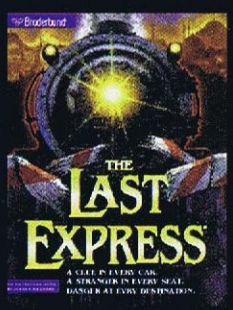

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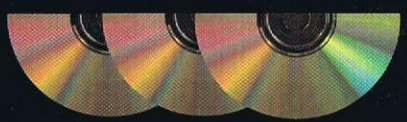

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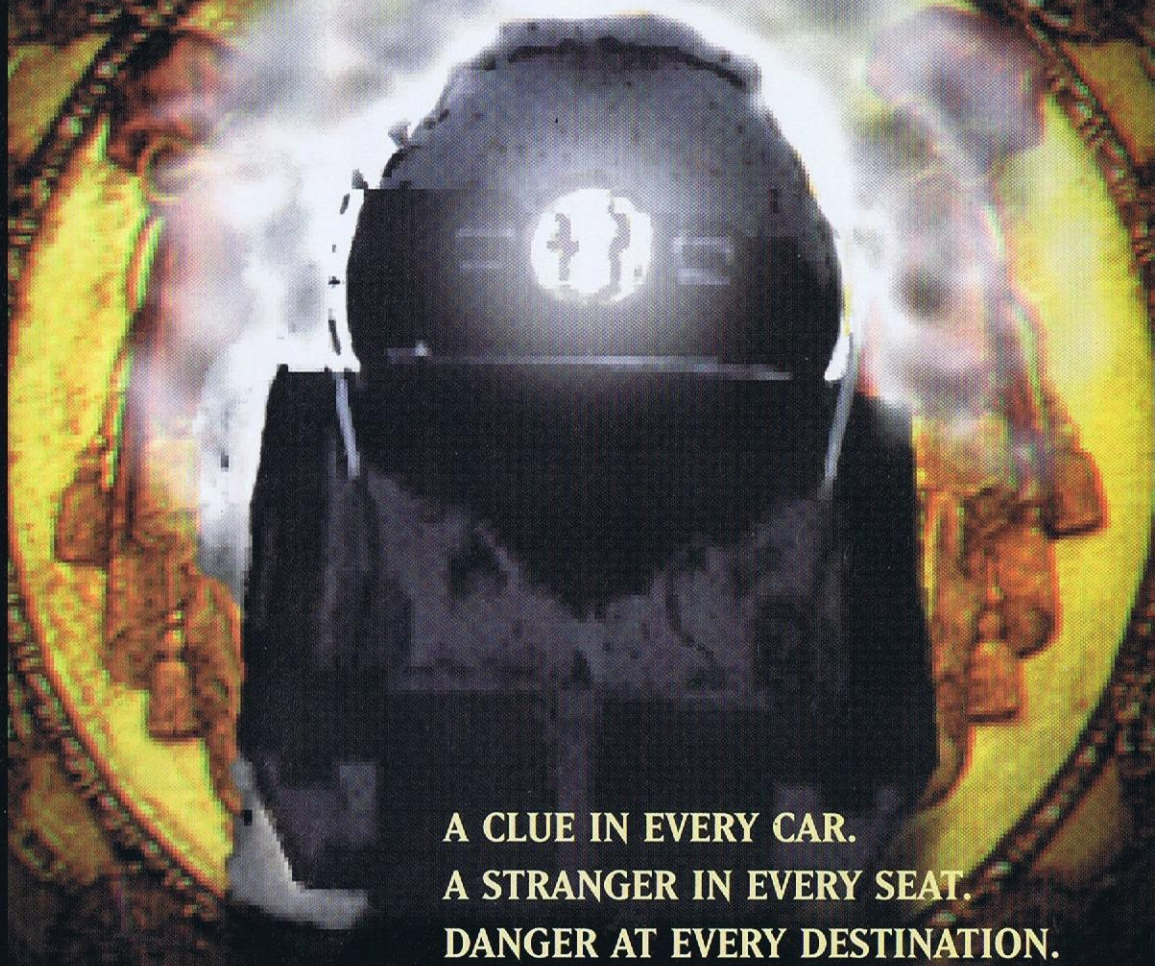

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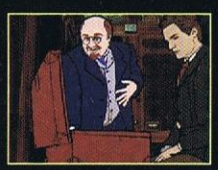

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- **Gripping action sequences**
- **Over 40 hours of gameplay on 3 CDs**
- **Over 30 main characters**

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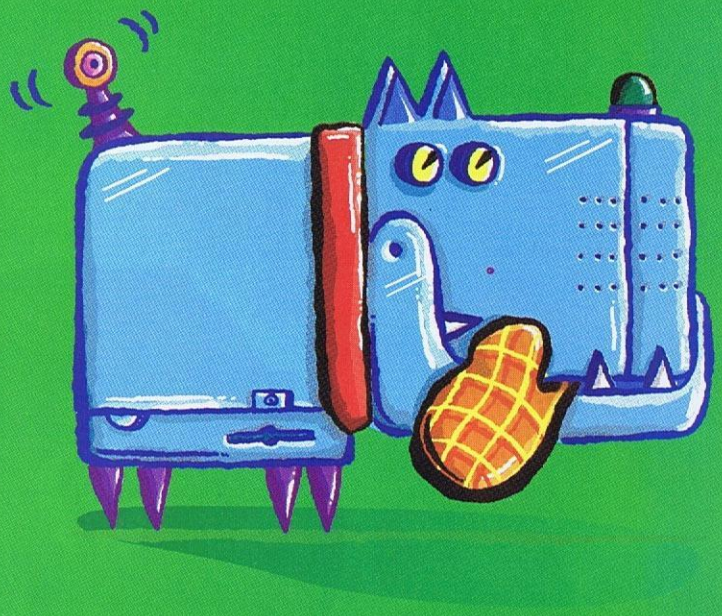

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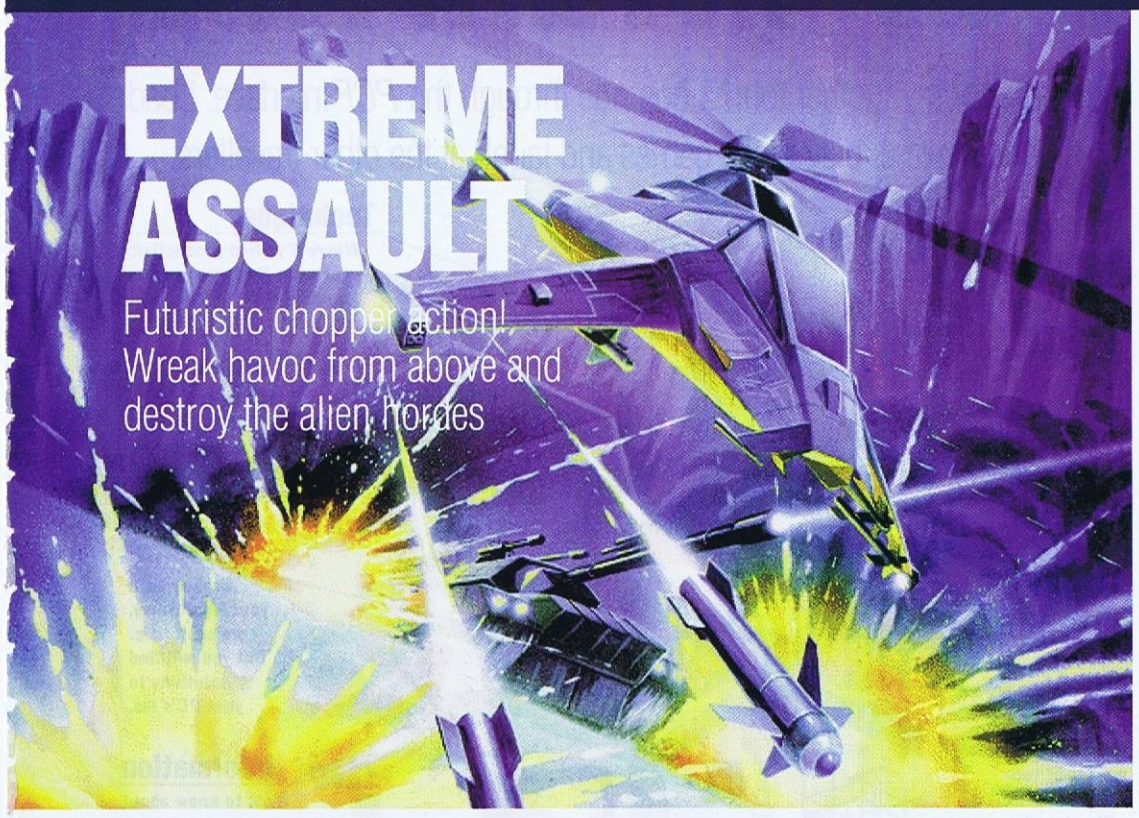
Unused time cannot be carried forward with Plan 180. Call charges and new ISDN or phone lines are additional. VISA or MasterCard required.

INSTALL

Everything you need to know about this month's software



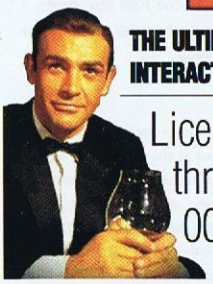
EXTREME ASSAULT

Futuristic chopper action! Wreak havoc from above and destroy the alien hordes

PC FORMAT EXCLUSIVES

ELECTION NIGHT

Live from Auntie: the hot election animations



THE ULTIMATE JAMES BOND INTERACTIVE DOSSIER

Licensed to thrill: the 007 dossier

QUAKE 2 PREVIEW

Your first look at the biggest next big thing

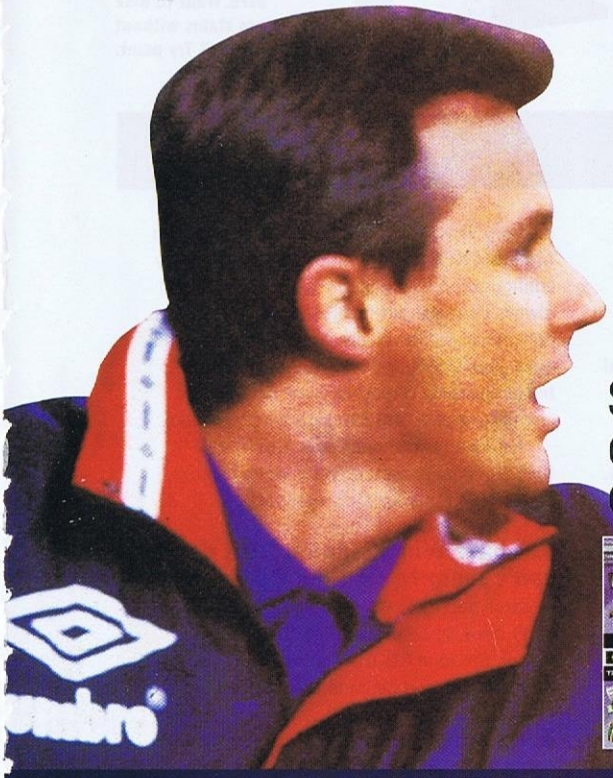
NITRO RACERS

Tiny cars at massive speeds

EXTREME 3D

Macromedia's stunning 3D package – yours to keep

PREMIER MANAGER 97



Sheepskin coats are back: organise your squad, win the big one and be over the moon, Brian

PC FORMAT PLAYLIST

PLUS ALL THESE GREAT DEMOS AND SOFTWARE

Pandemonium! ● Blood ● Carmageddon – the uncensored version ● Wild Ride ● Dark Colony ● Space Station Simulator ● Oxford Encyclopaedia ● MemoWeb ● Cybertation ● Hedgecoe Photograph

GETTING STARTED

Invite these covermounts to your house on a Friday night, sit them down, and get them utterly legless.

HD version

If you've bought the HD disk version of *PC FORMAT*, boot up your PC. Pop in the first disk and double-click the File Manager icon (via Explorer if you're a Win 95 user) to reveal a window showing all your drives. Click the A icon, which reveals the floppy contents. Then double-click on the appropriate file (check out the floppy section of Install to see what it is).

CD instructions

Windows 95 users: Autoplay should automatically load the menu. If it doesn't, press the Start button, click on Run and then enter: **d:\pcfmenu.exe**, where 'd' is the letter of your CD-ROM drive.

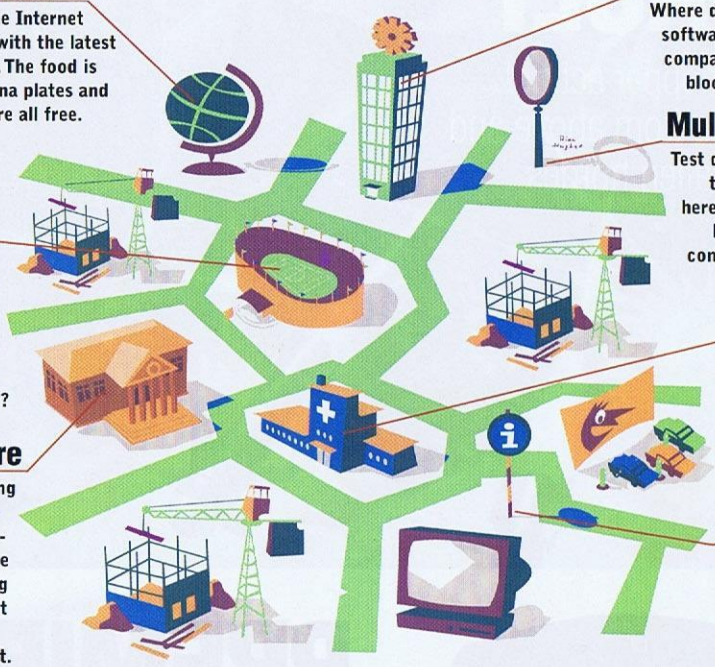
Windows 3.x users: Go to the File Menu in program manager and choose Run. In the Run box, type: **d:\pcfmenu**, where 'd' is the letter of your CD drive.

And now...
To view the demos in each category, just point the mouse at the appropriate icon (Games Arena, Technical College, and so on) and a pop-up list appears. Using this list, double-click the softare title that you wish to install. Pay careful attention to any instructions which follow.

To exit the interface simply click on the Bye! button. Enjoy yourself...

Your guide to the PCF INTERFACE

Another month, another tourist bus ride through the *PCF* interface. Load up that shareware, play those games and laugh at the other travellers.



Wired World
Fly around the Internet in first class with the latest Net software. The food is served on china plates and your drinks are all free.

Technique
Where d'ya find productivity software that's way beyond compare? To a green tower block with a cog on top.

Multimedia
Test drive the Porsches of the Multimedia world here. Just don't steal the keys or big Doug will come round your house.

Games Arena
Stop playing games in your bedroom and start playing them inside a large cartoon stadium. Okay?

Hospital
Broken both your legs? Sorry, we can't help. But you will find solutions to your PC's ills.

Shareware
Imagine getting your hands on masses of top-notch software without paying a bean. It's not theft, it's our Shareware slot.

Information
Want to know about our interface? Click here. Want to hide grass stains without bleaching? Try paint.

TROUBLESHOOTING GUIDE

STUCK WITH OUR COVERDISC? DON'T TOUCH THAT dial! Before phoning our ever-helpful technical support team, read this first. It's our guide to the five most common problems you may encounter trying to run software.

1.'Missing DDRAW.DLL or DDSOUND.DLL' message

This is a Windows 95 program and it requires Microsoft's DirectX drivers. You can install this from the Hospital section. But after installation you need to reboot before Windows catches on. But see the next item.

2. Windows 95 won't start up anymore

A number of Win 95 games install Microsoft's DirectX software automatically. Unfortunately, Microsoft still hasn't ironed all the bugs out of the graphics drivers and if you're one of the unlucky few with a non-compatible graphics card, you may find that Windows no longer starts at all. What's the solution? Reboot and press [F8] when you see the 'Starting Windows 95' message. You're now in Safe Mode and, by using Display Settings in the Control Panel, you can re-install your original graphics drivers from a floppy. If you don't have your drivers on a floppy, demand them from your supplier at once and don't let anything install DirectX on your PC until you do.

3. A DOS game starts up, but then immediately crashes

Some high-res titles require your graphics card to be VESA 2 compatible. Try installing *Display Doctor* from the CD's Hospital – this program creates a universal VESA driver which is tailor-made for your graphics card.

4. A DOS game won't even start

DOS games need lots of free 'Conventional' memory. If you have either a DOS 5 or 6, run MEMMAKER, which optimises your memory configuration. If you don't have it, you can always do it the old-fashioned way: check out how much you have with the MEM command; open your Config.sys and Autoexec.bat files; try temporarily removing some devices and changing your EMM386 settings and reboot.

No idea how to open your Config.sys file? No idea, in fact, of what we're talking about? Dig out your DOS manuals.

5. I have Win 95, and a DOS demo can't seem to find my CD drive

In these post-Win 95 days, most suppliers don't seem to be bothered to install DOS drivers for your CD-ROM drive. Go to your supplier and demand that it does.

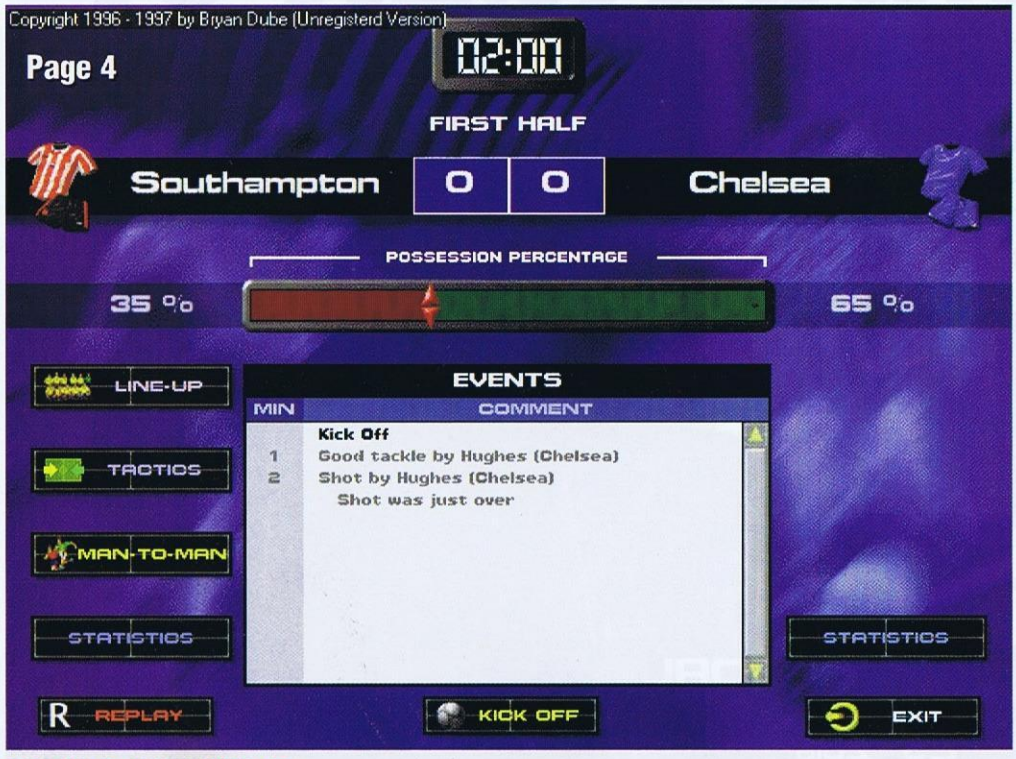
6. As a last resort...

Contact the softie or call the number below.

Still stuck? Call CD Support on ☎ 01225 442244 or e-mail: support@futurenet.co.uk

CONTENTS

An armada of sonic action guaranteed to burn the *ennui* from your breeches.

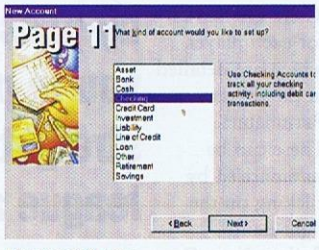


PREMIER MANAGER 97 Football players get all the fame, respect and money. Managers get a decent coat.

EXTREME ASSAULT Fly a helicopter so advanced it hasn't even been thought up yet – and destroy things.

BLOOD It's *Duke Nukem* with swords and demons. Hack and slash your way through this latest 3D shooter.

NITRO RACERS Recall the classic arcade fun of *Super Sprint* in this SVGA remake. It's all very dinky.



MONEY 97 Yep, we're giving away money. Actually, it's just the demo, so you can't spend it. Sorry.

EXTREME 3D Over £500 of graphics software for nothing. It's all yours, and it's absolutely free.

QUICK SEARCH GUIDE

If you are having any problems running software through the *PC FORMAT* CD menu, you may wish to install some of the programs manually. To do this, look down the left-hand side of this list for the program name then, using either File Manager or Explorer, change to the relevant directory and double-click on the executable file. Alternatively, use the RUN command to type out the path and name of the program you wish to install, replacing the letter D with the letter of your CD-ROM drive.

COLLEGE

Cybertation (Win 3.1)	d:\tech\cyber\cyber311\setup.exe
Cybertation (Win 95)	d:\tech\cyber\cyber95\setup.exe
Delphi	d:\tech\delphi\setup.exe
MemoWeb	d:\tech\m1073d32.exe
Microsoft Money 97	d:\tech\money\money.exe
Picture Man 3	d:\tech\picman3\setup.exe

THE CRITICAL LIST

Hedgecoe's Photo Guide	d:\anglia\setup.exe
House of Commons	d:\critical\bbc\bbc_hoc.mov
James Bond Dossier (Win 3.1)	d:\critical\bond\bond16.exe
James Bond Dossier (Win 95)	d:\critical\bond\bond32.exe
Labour targets	d:\critical\bbc\targets.mov
Landslide	d:\critical\bbc\slide.mov
Number 10	d:\critical\bbc\youngest.mov
Oxford Encyclopedia	d:\critical\oie\oie_demo.exe
Quake2 Preview	d:\critical\quake2\install.exe
Space Station Simulator	d:\critical\sstation\sss_demo.exe

GAMES

Blood	d:\games\blood\install.exe
Carmageddon	d:\games\carmdmo\dosinst.exe
Dark Colony	d:\games\colony\dcolon.avi
Extreme Assault	d:\games\assault\setup.exe
Nitro Racers	d:\games\nitrodem\install.exe
Pandemonium	d:\games\pandemon\setup.exe
Premier Manager 97	d:\games\pm\setup.exe
Sandwarrior Cheats	d:\games\sandcrks\sandcrks.zip
Wild Ride	d:\games\wild\install.exe

HOSPITAL

DirectX3	d:\games\pm\directx\dxsetup.exe
Display Doctor	d:\hospital\display\sdd53.exe
QuickTime (Win 3.1)	d:\anglia\qtinstal.exe
QuickTime (Win 95)	d:\hospital\Qtime\qtime95\qt32inst.exe
Thunder Tools	d:\hospital\ThunderUt.exe
Video for Windows	d:\hospital\vfw_11e\setup.exe
Win32s	d:\hospital\win32\disk1\setup.exe
WinG	d:\hospital\wing\setup.exe
WinZip (Win 3.1)	d:\hospital\winzip\winzip31.exe
WinZip (Win 95)	d:\hospital\winzip\Winzip95.exe

SHAREWARE LIBRARY

Animated Objects	d:\share\win95\a3doss\setup.exe
AsciiArt	d:\share\win31\ascart\setup.exe
BuzOf	d:\share\buzzoff\setup.exe
CD Quick	d:\share\win95\qmon\setup.exe
Commander Lite	d:\share\win95\elowlt\setup.exe
Copy-Zit	d:\share\win31\copyzi\setup.exe
DLL SHow	d:\share\win95\dllshow\dllshow.exe
Fast Return	d:\share\win95\fastr\setup.exe
Fiction Magician	d:\share\win95\ficmag\setup.exe
Idyl Phone Book	d:\share\win95\phone\pb97setup.exe
InfoCourier	d:\share\infocour\install.exe
Pointx 20	d:\share\pointx\setup.exe
Shove It	d:\share\win95\shovit\setup.exe
Sky Screen Saver	d:\share\win31\skyscr\setup.exe
SmartSum	d:\share\win31\smsum\install.exe
SuperType	d:\share\stype\install.exe
Tarot Pro 4	d:\share\win31\tarot\tarotpro.exe
ToolBar	d:\share\toolbar\setup.exe
Windows Commander	d:\share\win31\wcmd\install.exe
WinSafe	d:\share\win95\winsafe\setup.exe
WinterTree Thesaurus	d:\share\win31\wintree\install.exe
WinXss	d:\share\win95\winx32\setup.exe
WiseBar	d:\share\win31\wisbar\setup.exe
Z3DC Driver	d:\share\win31\Z3DC\setup.exe

WIRED WORLD

AnaWave Gravity	d:\wired\gravity\grv1_1.exe
CompuServe (Win 3.1)	d:\wired\wincim\csi26uk\setup.exe
CompuServe (Win 95)	d:\wired\wincim\csi303uk\setup.exe
Ftp Voyager	d:\wired\ftp\setup.exe
HTML Assistant	d:\wired\html\pro97dem.exe
NetLab	d:\wired\netlab\install
PointCast	d:\wired\pcnet\pcnzdnet.exe

Still stuck? Call CD Support on ☎ 01225 442244 or e-mail: support@futurenet.co.uk

PC FORMAT EXCLUSIVE

PREMIER MANAGER 97

Playable demo by Gremlin ☎ 0114 275 3423

Maybe Alex Ferguson can take it **easy** – but Roy Evans, Kenny Dalglish, Arsene Wenger *et al* need to **boot-up** their hard drives, and get some **serious** practise in this summer.

Just like on the TV, match events and statistics show you, in plain English, large figures and pretty bar graphs, just how badly your team is playing.

DESPITE THE ENDLESS VARIETY of roles available to you in *Premier Manager 97* – which seemingly range from Director of Football to tea lady – it's at grass roots level that you get involved with the *PCF* demo of Gremlin's management sim. Simply install it to your hard drive, run it from the Start menu in Windows 95, zip up your tracksuit and you're off.

As with most of the game, the icon-based control system is virtually self-explanatory throughout – but there are short cuts to be aware of, and dead-ends to avoid (especially the initial option screen, which provides your first example). The comprehensive Data Base options aren't available to you, and neither is Pro League Manager – so head straight for the straight Manager League icon and the basic Trainer Mode in the resultant pop-up screen.

After entering your name and choosing one of the 92 English League teams, continue through the details of teams entering in various European competitions, until you find your own team's objectives detailed in a table.

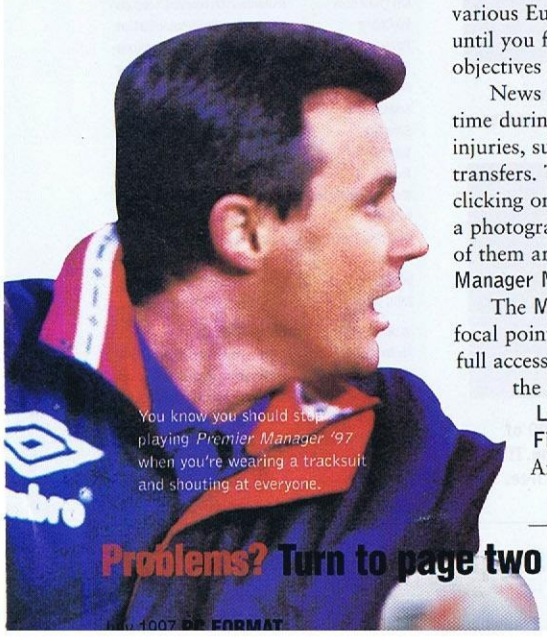
Gollazzoo! If your team's abilities are less than impressive, replace all the home-grown players with confused, talented foreigners.

News may pop up at any time during play with info on injuries, suspensions and possible transfers. These are deleted by clicking on OK – and if you lack a photographic memory, files of them are accessible via the Manager Menu at any time.

The Manager Menu is the focal point of your demo, with full access to the News, plus the option to view Results, League Tables and the Fixtures List at any time. And, of course, it's the place to determine the Line-up and Tactics for both your team and your opponents. The first stop is Line-up, which details your first 11 players, plus subs and reserves. There are marks for each player, which are detailed in the player Parameters. These can be summarised by clicking on the right-hand Ratings icon. Get rid of out-of-position or injured players and select your 11.

Friendlies are by-passed and you're plunged straight into league action

Injury and Statistic icons transport you to other screens, which tell you how long your players injuries are going to take to heal and what their overall form is. From here, you can also refine your tactics. Clicking on the player bar, followed by another player, swaps the two over – either positionally, or by moving them in and out of the team. Their position is shown on a pitch



You know you should stop playing *Premier Manager '97* when you're wearing a tracksuit and shouting at everyone.

Problems? Turn to page two of Install for help on the five most common disc problems

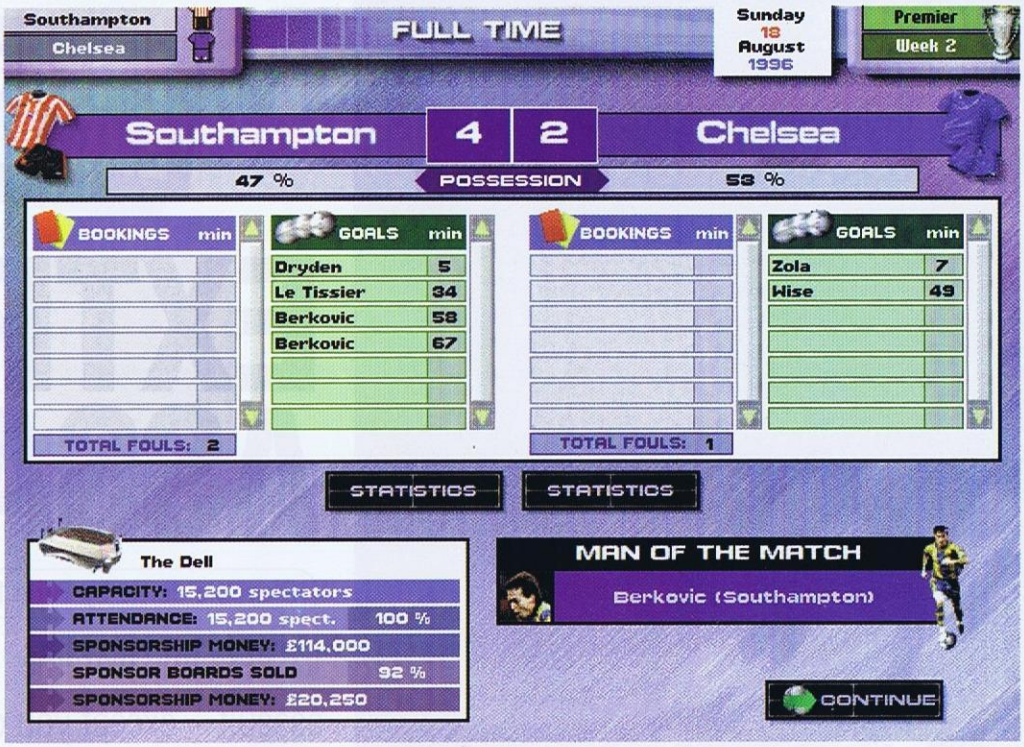
below, together with a shaded area which indicates their ability to roam. This area can be altered by clicking and dragging the arrow icons in the corners.

Click on the Team Tactics icon to dictate the pattern of play for your team. Easy tick box arrangements and plus-sign icons enable you to select percentage of passing required and counter-attacking, as well as the tackling and marking styles. You can look at the opposing teams line-up in order to see if it has any bearing on your decisions.

And so to the match. Friendlies are by-passed and you're plunged straight into league action. The two teams line-up complete with pictures of the team's faces. Although this is impressive, a quick double-click speeds you on your way once the novelty wears off. When the game kicks off, the match facts vary between teletext-style listings and actual match action with Barry Davies commentating. This needs updating throughout the game as you alternate between the two. A quick click on either Kick Off or Continue gets things moving again.

The action is superb and Gremlin has struck a good balance when it comes to how much you watch. At any time, you can alter your line-up or tactics in the data screen, or view the statistics as the match progresses. At full-time, any number of match facts and statistics can be found in either tabloid-style soundbites or in greater depth.

Though no Save option is at your disposal, the ability to exit is available at any time, but then with a demo such as this, why would you want to do a silly thing like that? PCF



This is one of the most informative post-match screens, showing the various match statistics for each team. More importantly, the stadium statistics show you how much money you've been given by sponsors and how many burgers you sold in the stands.

There are so many nonsense competitions and such a huge mass of silverware, it's almost impossible not to win something. Unless you're managing Stoke City.

Any number of match facts and statistics can be found in either tabloid-style soundbites or in greater depth

PREMIER STAGES

1 Of the four levels of responsibility open to you in the full game (Trainer, Manager, Accountant and Total Boss), the basic Trainer option is available to you in the demo. It is present in the Manager League Format, but there the Pro-Manager League is also available in the full game. The Data Base is also off-limits.

2 Select a team that you like the look of from any one of the four English Leagues. Enter your name, click on a kit icon to select the players that'll make up your team and continue through the information screens (noting how incredibly up-to-date they are), until you find your team's season objectives.

3 The Manager Menu is the default screen to which you always return in *Premier Manager 97*. You'll find that it contains most of your main options: Line-up, Tactics, News, Results, League Tables, Fixtures List and so on. Time to get straight down to line-up and start sorting out the lads who you'll look after.

The main *Premier Manager 97* screen gives access to the main options.

PREMIER MANAGER 97

Minimum system: 8Mb; 486; mouse; Windows 95
To install: Choose *Premier Manager* 97 from the CD menu
To run: Select the *Premier Manager 97* option from from the Program Files menu, within the Windows 95 Start menu
To quit: Click on the icon in the bottom right of the menu screen

Problems? Turn to page two of Install for help on the five most common disc problems

Remember *Blue Thunder?* Well, *Extreme Assault* is a bit like that, except the buildings don't wobble and Roy Schneider isn't in it.

PC FORMAT EXCLUSIVE

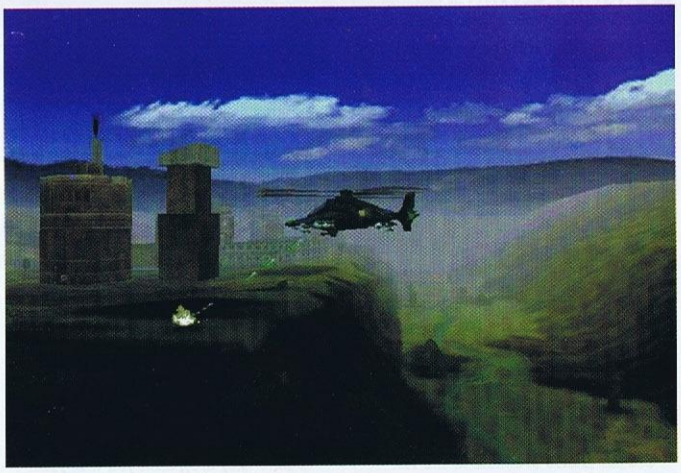
EXTREME ASSAULT

Playable demo by Blue Byte ☎ 01604 24553

It's certainly extreme, and it's a bit like assault – except you don't **pummel** somebody's **head** into a wall. Find out what it's all about with our **exclusive** demo of the arcade helicopter **blaster** that doesn't like your face.

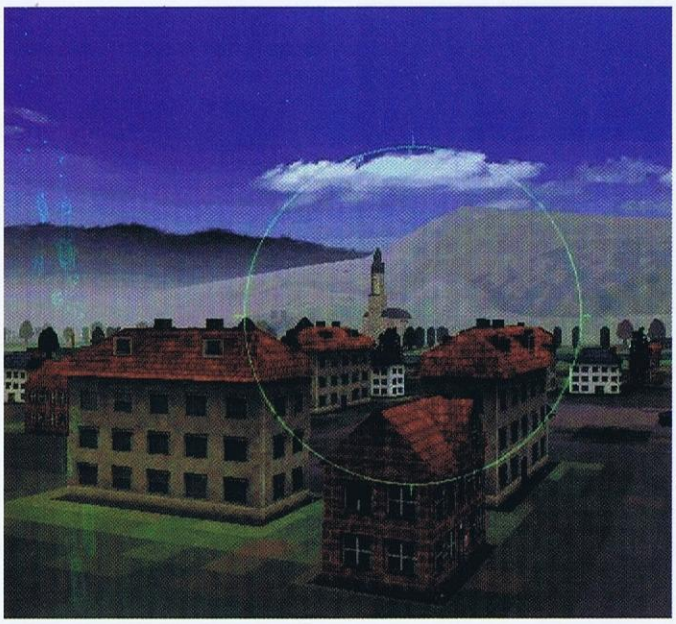
HELICOPTERS ARE NOTORIOUSLY difficult to fly. Not only can you go up, down, left and right – you can go backwards too. And because of the design, there's no rear-view mirror, which is why copters are so tricky to control. However, they're also cool – they fly all over the shop, laden down with a huge number of cannons, rockets and missiles, and destroy things up-close.

So, copters have a good side, and a bad side. The question is: are you interested in one that's easy to fly and equipped with the finest 21st century weaponry? It could, quite possibly, be the pinnacle of enjoyment. It could also be *Extreme Assault*, a helicopter marvel with easy controls, lots of laser and missile blasting and stupendous graphics. Hang on a cotton-pickin' minute – it is *Extreme Assault*. And, lucky beggars that you are, you get to play a chunk of the final game by simply installing our demo.



On the outskirts of the army base, Mickey's Tavern turns out to be an important military target, producing explosive baby milk. Here it is, being annihilated.

Problems? Turn to page two of install for help on the five most common disc problems



The green circle indicates the extent of the Target Acquisition Zone, or TAZ. Not to be confused with TAZO, which is a circular piece of plastic found in crisp packets.

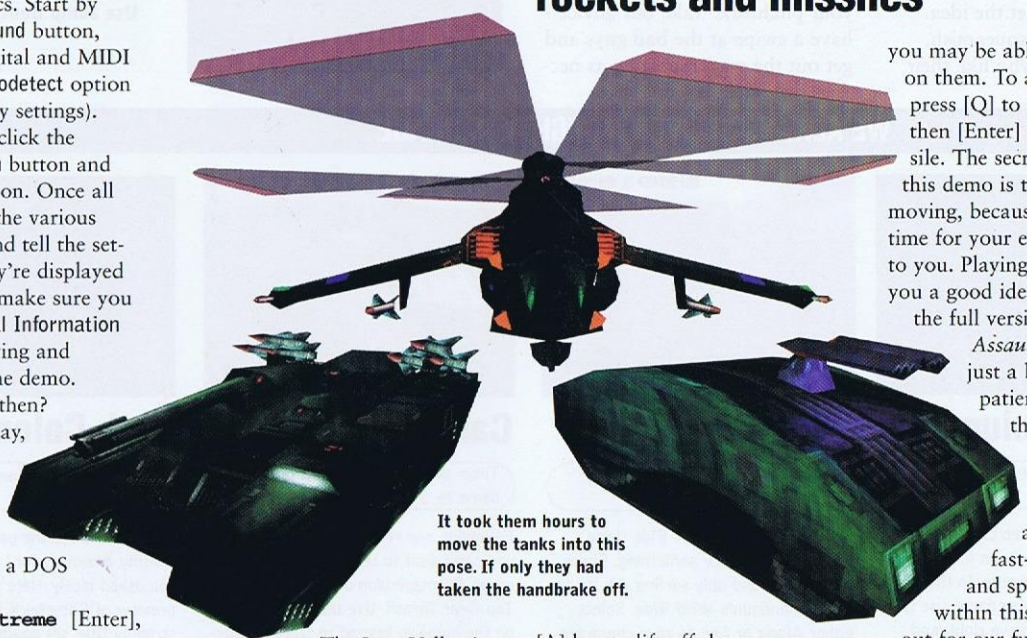
Enemy helicopters, tanks, ammo trucks, churches, flying saucers, massive robots, sheep... anything that moves (or doesn't move) is a viable target in *Extreme Assault*.

Installation is a little bit involved, so bear with us while we show you how to get it working. After the files are copied across, you need to configure the game for sound and graphics. Start by clicking on the sound button, then configure digital and MIDI audio (use the autodetect option to find those tricky settings). When you finish, click the graphics resolution button and read the information. Once all is prepared, scan the various graphics modes and tell the set-up program if they're displayed correctly. Finally, make sure you read the Additional Information for details on playing and troubleshooting the demo.

Done all that then? You're ready to play, then. Quit the set up program (ignore the Start Extreme Assault button), and from a DOS prompt, type: **cd\bluebyte\extreme** [Enter], then **XA** [Enter] to start the game.

After the introduction screens, you need to choose a difficulty rating. Depending on how good you think you are, select any of the pilots – from easy, to insanely difficult – then choose an area of operations.

Fly all over the shop, laden down with a huge number of cannons, rockets and missiles



It took them hours to move the tanks into this pose. If only they had taken the handbrake off.

The Lost Valley is the lacklustre follow up to *Jurassic Park*. It's also a large outdoor arena that contains a wide variety of combat missions. Trapped Beneath the Earth is a small warren of tunnels that contains a rather nasty boss. The choice is yours – but we like to start with The Lost Valley.

Extreme Assault is a mission-based game and each mission takes place in a small area. Mission One is a simple air combat sortie, requiring you to destroy two enemy helicopters with your Sioux AH-23. Use the [A] key to lift off the ground, then the [Arrow keys] to aim at your target. Next, use [Backspace] to change to the razor gun, then press [Ctrl] to fire. After you obliterate the choppers, press [F12] to move to the next mission. Subsequent sorties are somewhat more involved than this one, so it's fortunate that the spoken mission briefings detail every target you need to destroy.

The next mission requires you to take out some ground targets as well – and if you've picked up some ammunition, you may be able to use missiles on them. To activate these, press [Q] to select a target and then [Enter] to launch a missile. The secret to success in this demo is to simply keep moving, because it often takes time for your enemies to lock on to you. Playing this should give you a good idea of how to tackle the full version of *Extreme Assault*. It requires just a bit of skill and patience to complete the first mission area, so get practising.

If you can appreciate the fast-paced action and splendid graphics within this taster, watch out for our full review of *Extreme Assault* in the August issue of *PC FORMAT*. It's exciting action-packed 3D blasting, *par excellence*. PCF

EXTREME CONTROL

Control direction	[Arrow keys]
Increase altitude	[A]
Decrease altitude	[Z]
Fire weapon	[Ctrl]
Change weapon	[Backspace]
Choose missile target	[Q]
Fire missile	[Enter]
In-game config	[F2]
Quit mission	[Esc]

Extreme Assault

Minimum system: 16Mb; 486DX4-100 and SVGA
Windows 95-compatible? Yes
To install: Select *Extreme Assault* from the CD menu
To run: Type: **cd/bluebyte/extreme** [Enter] from within DOS, then **xa** [Enter]
To quit: Press [Esc], End Mission, then choose Quit Game

Problems? Turn to page two of install for help on the five most common disc problems

BLOOD

Shareware by Eidos/Monolith ☎ 0181 780 2222

There's **nothing** quite as annoying as coming back from the dead. Why not take the initiative and **Spice** things up by sticking a pitchfork through a **zombie's** head?

THE PENULTIMATE GAME TO use *3D Realms'* Build engine, *Blood* pushes it to its limits in a gore-soaked splatterfest with plenty of guts. Most of them flying through the air. The story is a Lovecraftian cocktail of evil and black magic, the opposition comes direct from your worst nightmares, and the weaponry is brutal rather than technological. Sticks of dynamite? Flare guns? A pitchfork? You get the idea.

It's not for the squeamish, nor is it for those who like their games to be remotely fair. If you're expecting to romp through the first of *Blood's* eight shareware levels on your first go, then forget it. Even if you manage to locate all the hidden health and shields, the twin gun power-up and everything else, we still think you'll be quickly making the switch from undead to dead. Especially when the guns run out and you're stuck with your pitchfork. Take our advice - have a swipe at the bad guys and get out the way, repeating as necessary, and never shoot an innocent-looking barrel from close range. They have a tendency to explode and take you with them. If it all seems a bit too scary for you, take heart. We've put together a list of Blood's many keys, but feel free to change them if you don't like them. PCF

As cartoons have been telling us for years, dynamite's far too much fun to be left in the hands of boring demolition experts. Abuse it!

BLOOD

Minimum system: 16Mb; P75; SVGA
Windows 95-compatible? Yes
To install: Select *Blood* from the CD menu and follow the on-screen instructions. Run setup.exe from the *Blood* directory on your hard disk and select your sound and video options.
To run: Go to the *Blood* directory and type blood
To quit: Select Quit from the main menu

ARE YOU IN CONTROL?

Movement	[Arrows]
Use items or open doors	[Space bar]
Toggle automap	[Tab]
Toggle map follow mode	[F]
Run	[Shift]
Auto run	[Caps lock]
Strafe	[Alt]
Strafe left	[,]
Strafe right	[.]
Fire the selected weapons – primary fire	[Ctrl]
Fire the selected weapons – alternate fire	[X]
Jump	[A]
Crouch	[Z]
Look up	[PgUp]
Look down	[PgDown]
Aim up	[Home]
Aim down	[End]
Turn around	[Backspace]
Cycle through inventory items	'[' or ']'
Use selected inventory item	[Enter]
Use Beast Vision	[C]
Use Crystal Ball	[B]
Use Guns Akimbo	[G]
Use Jump Boots	[J]

GAMES ARENA EXTRA WE ALWAYS DELIVER A MIGHTY PACKAGE

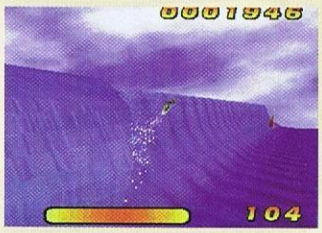
Pandemonium!

Playable demo by BMG ☎ 0171 973 0011

Help Nikki get one step closer to her quest by playing this demo level set in the mysterious ice caverns. In this superlative 3D platform game, use [A] to move left, [S] to move right, and [Space bar] to jump. Hit the [Space bar] twice for extra bounce 'n' twist action. Take care not to get bitten by one of those giant spiders, and remember – you can jump on their heads to kill them. Collect all the gems, and run like the clappers for the exit!

PANDEMONIUM!

Minimum system: 8Mb; P90; Win 95
To install: Select *Pandemonium* from the CD menu
To run: Choose *Pandemonium* from Crystal Dynamix on the Windows Start bar
To quit: Hit [Esc] then choose Exit from the File menu



Wild Ride

Shareware demo by Runandgun Inc ☎ 00 1 312 225 1211

Shoot some surf, dude! Ride those tubes! Extreme! Or something. Check out the one and only surfing sim for the PC, Runandgun's *Wild Ride*. Select either Alana or Lee as your character on the beach, load or save your game from the beach hut, then step up to the water for an incredible board experience. Use a joypad if you have one, or try the cursor keys and [Space] to control yourself on the sea. Stay upright by steering across the path of the wave.

WILD RIDE

Minimum system: 16Mb; P100; Windows 95 with direct X
To install: Select *Wild Ride 95* from the CD menu
To run: Select Runandgun from the Windows Start menu
To quit: select Exit from the File menu

Carmageddon

Time- and content-limited playable demo by SCI ☎ 0171 585 3308

Following our review on page 78, bet you can't wait to test drive our speeded-up *Carmageddon* demo. The level is Top Gear Thrash. Use the direction keys on the numeric keypad to steer, accelerate and reverse, and use the [Space bar] to apply the handbrake. Pinpoint your opponents' locations using [Tab], and if they get to you first use [Insert] to recover yourself, or [Back space] for a quick fix if the damage is minor.

CARMAGEDDON

Minimum system: 8Mb; D90; DOS 6.0; Hard drive 100Mb
To install: Select *Carmageddon* from the CD menu
To run: in DOS, change to the Carmdemo directory and enter Carmdemo
To quit: Select Quit from the main menu

Dark Colony

Rolling demo by Gametek ☎ 01753 854 444

You want to see the game we're all waiting anxiously for? All right, since you asked nicely. Here's a little sneak preview of Gametek's latest real-time strategy title, set against a gloomy Martian backdrop. Humans fight the insidious Grays for control of the newly discovered element, Petra-7. In August you'll be able to play it for the first time, as *PC FORMAT* brings you the exclusive interactive demo. For now you'll have to make do with this little taster, which will run as an .AVI file straight from the CD interface.

DARK COLONY

Minimum system: 8Mb; P90; Video for Windows
To install: Runs from the CD
To run: Select *Dark Colony* from the menu
To quit: Closes automatically when finished

Problems? Turn to page two of Install for help on the five most common disc problems

PC FORMAT EXCLUSIVE

NITRO RACERS

Get yourself a fast pit crew, and they can whip off your tyres faster than your grandmother can suck eggs.

Playable demo by 3DO/Torc ☎ 0181 541 4082

Remember the good old days, when **men** were men and racing **games** were top-down? **Now's** your chance to **relive** those fine times and drive a **pint-sized** rally car.

EVERYONE LOVES A BIT OF mindless arcade action, and *Nitro Racers* provides a top-down, *Super Sprint*-style thrash round the track. As PC games become increasingly complex, take some time out to play this nippy demo which is so pleasantly short on depth, you could roll your trousers up and paddle in it.

Installing *Nitro Racers* is as easy as falling off a trapeze: first off, simply define your keys from the Controller Set-Up screen. All you need is accelerate, decelerate, steer left and steer right. Alternatively you can use any handy joypad. Up to three players can play on one PC, providing you have enough controllers to hand – use a joystick splitter to connect two pads.

Sitting comfortably? Then it's time to race. You can choose to play either the Arcade or Management game, each mode in the demo giving you a different track – the gloomy Palm Springs for Management (check out the pit stop on the left), or the dizzying U-Benz in Arcade mode. Decide how hard to make the race – all this does is vary the number of other cars on the track. Now you can set the names of the players, (either to play in Full Track of Scrolling View mode), and then hit Race.

The first race. The track is moodily dark (it's in amongst all those trees), but you can clearly see the pit area on the left part of the screen. You'll have to pull in if you mess up on that tricky corner (bottom right).

If you're playing in Management mode, you'll need to buy up some motor parts. This is the best engine available, and we guarantee you can't afford it.

If you choose to play the Management game, it's time to tweak that car to suit your style of driving. You have £20,000 to play with, so spend it wisely. The parts shop can sell you a new mechanic, pit crew, engine, set of tyres, and brakes. Click on Done when you've spent all your cash, and it's time to go to the track.

Wait for the green lights, then speed off the starting grid with the other cars in pursuit. There are up to eight vehicles on the roads, and if you're that way inclined, you can bounce off them to damage their chances of success, and push yourself round tricky corners at the same time.

You'll also need to learn very quickly how to take bends, since this is where victory is decided. Turn into a corner well in advance, and accelerate as you straighten up on the other side. Power-ups occur in the form of Nitros. Hit the Nitro key (the default is [Enter]) for a little speed boost. You can also use it as you enter the straights to put some distance between you and your closest rival.

Pelting round the track never fails to be exciting and the full game has 30 of 'em – check out our review on page 64. PCF

NITRO RACERS

Minimum system: 8Mb; P90
Windows 95-compatible? Yes
To install: Select *Nitro Racers* from the CD menu, and follow the on-screen instructions before running Setup.exe to set your sound options
To run: Go to DOS, and type Nitro, or select the Nitro.exe file from the Nitro folder in Win95
To quit: Select Exit from the main menu

DELPHI

Full program by Borland ☎ 01734 320032

For those of you who missed it last time, here's *the* visual programming language. *Delphi* is an object orientated system which some folk claim runs faster than *Visual Basic*. *Delphi* is a smart compiled language, and the full version is on this month's CD again. It's based on *Pascal*, and it makes defining your programs look very simple with a straightforward interface.

MEMOWEB

Interactive demo by GOTO ☎ 00 33 20 66 55 00

This useful utility grabs an entire Web site from the Net and stores it on your hard drive, along with all the relevant text and images. MemoWeb memorises all the HTML code and stores it on your computer so it can be browsed at your leisure off-line. You can capture your favourite Web pages on a LAN so your colleagues can look without downloading it themselves. Long pages can be snapped and then read without the need to remain connected.

CYBERTATION

Interactive demo by Notting Hill ☎ 0171 9736003

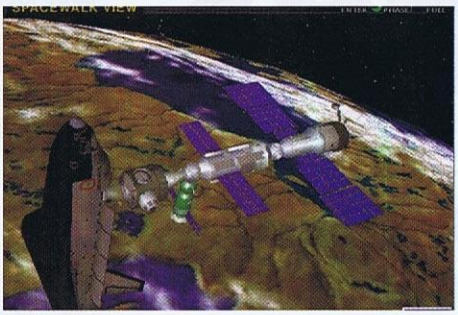
Your PC is capable of producing fantastic works of 3D art, and this is the program that's going to teach it how. *Cybertation* is based on the concept of evolving DNA-type graphical units, which will in turn evolve on-screen according to mathematical principles. The resulting models are colourful geometric spreads. Choose a 'seed', then hit the Mutate button to start the evolutionary processes.

Problems? Turn to page two of Install for help on the five most common disc problems

SPACE STATION SIMULATOR

Interactive demo by Maris Multimedia
☎ 0171 488 1566

Everyone grows up dreaming of being an astronaut. Roughly 14 of the world's nations are currently working hard on an international space project, and here's your chance to help shape the future. The *Space Station Simulator* does exactly what it says on the tin, enabling you to begin the construction of an orbiting sardine can. It's the multimedia version of an Airfix kit, but there's no need for you to get glue all over the place. Follow the on-screen instructions, and you're soon marvelling at the top technical accuracy of Maris' gravity-free guide to tomorrow's technology. Detailed 3D models and superbly researched specs enable you to dream about the cosmos in far greater clarity than ever before. Far out, literally.



A tantalising view of a spacebound tightrope walk. Don't look down, and don't relieve yourself over North America.

SPACE STATION SIMULATOR

Minimum system: 16 Mb; P75; Win 95
To install: Select *Space Station Simulator* from the CD menu
To run: Choose *Space Station Simulator* from your Windows Start menu
To quit: Select Exit from the main menu

THE ULTIMATE JAMES BOND DOSSIER

Content-limited demo by Eidos
☎ 0181 636 3000

He's the hardest, cleverest, English spy in history, albeit with a fluctuating accent. He drinks lots of Vodka Martinis, and knows his dessert spoon from his caviar fork. He's James Bond, and this is his dossier. The demo version features two sections from the full version, each based on a Bond girl from the last film, *GoldenEye*.

To see these sections, start up the dossier, then click on the Bond girls section in the main screen. Pictures, audio and video clips on the beautiful Natalya Fyodorovna and the bonkers Xenia Onatopp are all a click away. Feel free to look at the other sections, as although these are disabled in the demo, they tell you what groovy delights the full version has to offer.

It isn't every day of the year that a fellow can say he's planning to spend a long weekend with Pussy Galore.

THE ULTIMATE JAMES BOND DOSSIER

Minimum system: 8Mb; 486DX2; *Win 3.1*
To install: It runs from the CD
To run: Select *James Bond* from the CD menu
To quit: Click on the Power button

GUIDE TO PHOTOGRAPHY

Content-limited demo by Anglia Multimedia
☎ 0171 579 4106

Almost everyone has a camera. Wonderful things they are too, with a multitude of uses – from taking snaps of you looking like a felon for a passport, to getting some pictures of swimsuit beauties while on holiday in Barbados. No matter what you use it for, there's little doubt that at least a quarter of your photos come back with those nasty stickers on them telling you what you did wrong.

There's an easy way to stop taking blurry snaps, while also improving the artistic content of your photos. Just get some advice from the Professor Emeritus of Photography at the London College of Art – John Hedgecoe. His advice on camera basics is all presented in glorious FMV-tastic multimedia splendour.

This gentleman's extensive range of photographic kit enables him to pursue his questionable specialist hobby.

GUIDE TO PHOTOGRAPHY

Minimum system: 4Mb; 486; SVGA; *Win 3.1*
To install: Select *Photography Guide* from the CD menu
To run: Double-click the *Photography Guide* menu
To quit: Click on the Quit icon

OXFORD INTERACTIVE ENCYCLOPEDIA

Rolling demo by The Learning Company
☎ 0181 246 4000

The *Oxford Interactive Encyclopedia* isn't just an electronic, multimedia version of the best Oxford press reference works. Oh no, it's the only world-class encyclopedia dealing mainly with British information, rather than American.

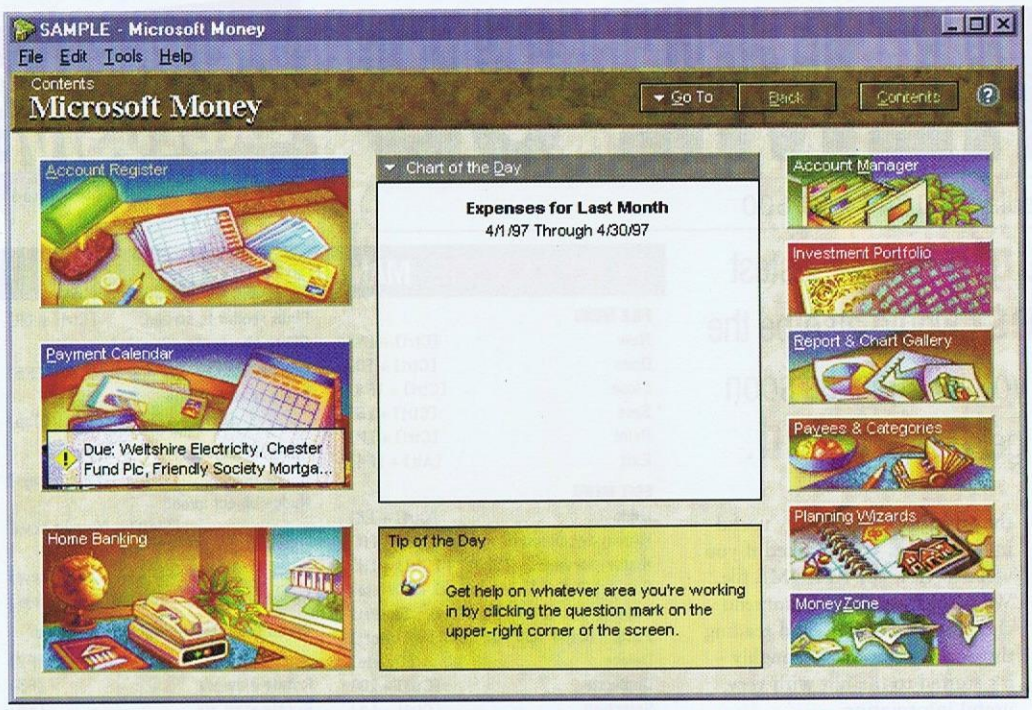
With electronic versions of the nine-volume encyclopedia, plus a whole host of companion works (from a Thesaurus to Computer Jargon dictionary), the *Interactive Encyclopedia* is the ultimate reference work. Take a tour through part of the features list with our superb rolling demo.

Pissarro had an oddly apt name for a man partial to a brew or two. The *Oxford Interactive* details famous drunks aplenty.

OXFORD INTERACTIVE ENCYCLOPEDIA

Minimum system: 8Mb; 486; SVGA; *Win 3.1*
To install: Not applicable
To run: Select *Oxford Interactive Encyclopedia* from the CD menu
To quit: Hold down [Alt] and press [F4]

Problems? Turn to page two of Install for help on the five most common disc problems



Some call it fool's gold, others think of it as a passport to pleasure, but we just like to see it pile up in our Swiss bank accounts.

MICROSOFT MONEY 97

Interactive demo by Microsoft ☎ 01734 270001

You mean you actually have **money?** Not like us poor writers. Bills **everywhere**, with nothing but the latest software to help.

Organising your personal cash-flow situation has all the entertainment value of peeling a banana. But, it has to be done, and the most accessible way to do it is with Microsoft's intuitive *Money 97*. You can customise it to perform a variety of financial functions for you, which soon become absolutely indispensable. If nothing else, it can remind you when to pay your bills, which is definitely a big plus if you're anything like as forgetful as us. Pie-charts, line graphs and all manner of weird statistical stuff make sense of your lovely wonga, and give you a clearer picture of what you're actually worth in cash terms. PCF

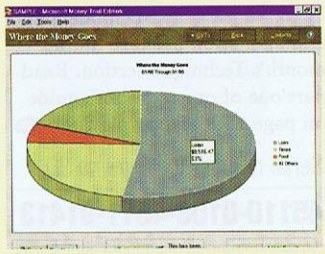
MICROSOFT MONEY 97

Minimum system: 16Mb; P90; Windows 95
To install: Select *Money 97* Demo from the CD menu
To run: Choose Microsoft *Money* from the Programs list on your Start menu
To quit: Choose Exit from the File menu

MICROSOFT MONEY 97 INS AND OUTS

1 The first thing to do is run the Product Tour. *Money 97* comes with a comprehensive Help file, so let it advise you on setting-up your first account. Launch the Tour from the Contents page, and follow as it tells you how to open the Account Manager application. There's also a sample account.

2 Once you've seen the basics, start to look at your finances. Use the Account Manager to begin a set of connected records, and then tell your PC what sort of monetary situation you need to monitor. You can also follow your credit card payments, and check your investments and bank details.



3 From here, you can use the pull down menus to analyse various aspects of your account. Set up *Money 97* to remind you when bills are due, and it deducts the correct sum from the running total. You can also see reports and charts indicating your spending habits. It's depressingly clear.

Get ready for more *Quake* oblivion.

QUAKE 2 PREVIEW

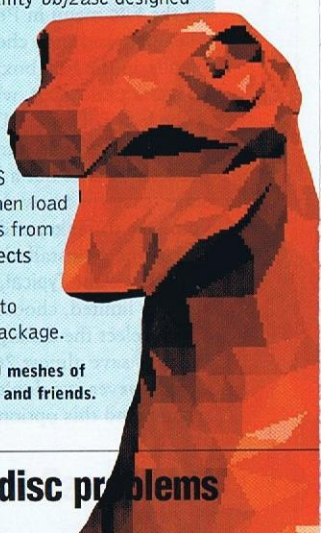
By Ellisoft/Id Software

Yep, that's right. Witness the gaming wonder that is *Quake 2*. At the moment, there's only a limited number of screenshots available of Id's most recent masterpiece, but there's just enough to be sure that *Quake 2* is going to be a blast. See for yourself by simply installing the *Instant Roller Slideshow* screensaver, plus the *Quake 2* images. From the floppy disk, run **Install.exe**. From the CD menu, choose *Quake 2*. Then, in Windows 95, right-click on the desktop, choose Properties, click the screensaver tab, and select *Instant Roller* from the list. In *Windows 3.1*, open the Control panel, select Desktop, and choose *Instant Roller* from the screensaver list. Then sit back and wait for the pics to kick in and blow your mind.

3D MODELS

Viewpoint DataLabs
http://www.viewpoint.com

A collection of high quality objects to render your own images. To load these beauties, you need a 3D package. If you have a copy of the CD edition of *PC FORMAT*, you already have *Extreme 3D* – just use the import command to load them up. Otherwise, you have to find your own 3D package. There's also the utility *obj2asc* designed to convert .OBJ files into .ASC files. Type **A:install** [Enter] at the DOS prompt. Then load the objects from the **C:\objects** directory straight into your 3D package.



You find 3D meshes of this dragon and friends.

Problems? Turn to page two of Install for help on the five most common disc problems

EXTREME 3D

PC FORMAT EXCLUSIVE

Full product by Macromedia ☎ 01344 458 600

Who would have **thought** that the fastest **3D** package in the **west** would also be the easiest to **use?** Well, you will, just as soon as you **install** it. So get **animated.**

MACROMEDIA'S *EXTREME 3D* has built up an enviable reputation for power and rendering speed over the past year. Now you can find out why. *Extreme 3D* runs under *Win 3.1* or *95* – but before you get started, you need to set up your PC and install it. And to use the animation features, you need to install both *Video for Windows* and *QuickTime*. Both these products can be found on the main Coverdisc, in the Hospital section. If you're a *Win 3.1* user, you need to install *Win32s*, a software utility that allows some 32-bit applications (including *Extreme*) to run under 16-bit *Win 3.1*. You also discover this within the Hospital section. Install the software, and it's then time to get *Extreme 3D* onto your machine.

So, start by putting the *Extreme 3D* CD into your drive. If you use Win *95*, just click on the Start button, and choose Run. Under *Win 3.1*, click on the File menu in Program Manager, and then choose Run. Finally, in the Run box, type: **d:\E3ACCESS.EXE**, where 'd' is the letter of your CD-ROM drive. This starts the installation process. There's not a lot to this stage, save for a few decisions you have to make, and the first is the type of installation. You probably want Typical, but if space is limited, choose Custom, and deselect the example files in order to save almost 20Mb.

However, we don't actually recommend this option, because the example files are very useful indeed. Next, you're asked if you want to view the README file. We wholeheartedly recommend checking this option, and reading the documentation thoroughly – it's stuffed to the hilt with very useful information.

You're now ready to start *Extreme 3D*. When you first run it, you're asked to enter your name, plus your company name and serial number. Your name should be fairly obvious, as should your company. The serial number to enter is (pencils and paper at the ready, boys and girls): **45110-0108-4511-91413.**

And so, you're running *Extreme 3D*, but you don't know what to do? Fortunately, you find a first-class tutorial on how to get the very best out of this highly professional 3D modelling and animation package in this month's Technique section. Read part one of our six month guide on page 150. Happy playing! PCF

Serial number for *Extreme 3D*

45110-0108-4511-91413

EXTREME 3D

Minimum system: 16Mb; 486DX2; SVGA; *Win 3.1*
Win 95 compatible: Yes
To install: Run **d:\E3ACCESS.EXE**, where 'd' is the letter of your CD drive
To run: Click *Extreme 3D* in the Macromedia group
To quit: Select Exit from the File menu

TO THE EXTREME MANIPULATE AT WILL

FILE MENU

New	[Ctrl] + [N]
Open	[Ctrl] + [O]
Close	[Ctrl] + [F4]
Save	[Ctrl] + [S]
Print	[Ctrl] + [P]
Exit	[Alt] + [F4]

EDIT MENU

Undo	[Ctrl] + [Z]
History backwards	[Ctrl] + [H]
History forwards	[Shift] + [Ctrl] + [H]
Cut	[Ctrl] + [X] or [Shift] + [Delete]
Copy	[Ctrl] + [C] or [Ctrl] + [Insert]
Paste	[Ctrl] + [V] or [Shift] + [Insert]
Delete	[Delete]
Duplicate	[Ctrl] + [D]
Select all	[Ctrl] + [A]
Get info	[Ctrl] + [I]
Find	[Ctrl] + [F]

VIEW MENU

Front	[Ctrl] + [5]
Left	[Ctrl] + [4]
Right	[Ctrl] + [6]
Top	[Ctrl] + [8]
Bottom	[Ctrl] + [1]

OBJECT MENU

Hide working plane	[Shift] + [Ctrl] + [I]
Orient work plane to view	[Shift] + [Ctrl] + [V]
Orient plane to world	[Ctrl] + [U]
Orient plane to ground	[Ctrl] + [G]
Show working plane	[Ctrl] + [Y]
Lock working plane	[Shift] + [Ctrl] + [Y]
Auto working plane	[Shift] + [Ctrl] + [Z]
Join profiles	[Ctrl] + [J]
Open geometry	[Shift] + [Ctrl] + [O]
Close geometry	[Shift] + [Ctrl] + [W]
Select next control point	[Shift] + [Ctrl] + [T]
Duplicate with link	[Shift] + [Ctrl] + [D]

ANIMATION MENU

Animation controls	[Shift] + [Ctrl] + [A]
Step backwards	[Shift] + [Ctrl] + [B]
Stop	[Shift] + [Ctrl] + [S]
Step forwards	[Shift] + [Ctrl] + [F]
Play	[Shift] + [Ctrl] + [P]
Open Score window	[Shift] + [Ctrl] + [C]

WINDOW MENU

Refresh	[Shift] + [Ctrl] + [R] or [F5]
New window	[Shift] + [Ctrl] + [N]
Open objects browser	[Ctrl] + [T]
Open views browser	[Ctrl] + [E]
Open materials browser	[Ctrl] + [M]
Open lights browser	[Ctrl] + [L]
Open world browser	[Ctrl] + [B]
Open layers browser	[Shift] + [Ctrl] + [L]

RENDER MENU

Uniform smoothing	[Shift] + [Ctrl] + [U]
Adaptive smoothing	[Shift] + [Ctrl] + [E]
Final render to screen	[Ctrl] + [R]

Other shortcuts

Refresh display	[F5]
Move to next scene	[Ctrl] + [F6] or [Ctrl] + [Tab]

Nudging objects

Nudge object	[Cursor keys]
Nudge object in/out	[Shift] + [Cursor keys]
Nudge rotation	[F3] or [F4] + [Cursor keys]
Nudge scaling	[F2] + [Cursor keys]

When dragging objects with mouse

Scale object	[F2]
Rotate view y/z	[F3]
Rotate view x/y	[F4]

When using Magnify

Scale out	[F3]

Using the Toolbar

Toolbar icons which have a white tab in their lower-left corners have an extra options window which appears when you double-click on them.

Toolbar icons with a dark tab in their lower-right corners possess multiple options. Click, hold and move the cursor to the left or right to make the extra icons appear.

If you wish to alter the current view of the scene which you're editing, click on the Hand Tool. You can then hold down [F2] (to scale in and out), or [F3] and [F4] to rotate the view. Click and hold the Hand key, and then move the mouse to the left or right to select one of these new icons – these enable you to rotate the view in all three axis.

Constraining snapping

These options block movement in the wrong direction. Press the key while dragging an object to see them in effect.

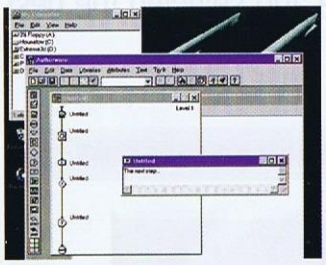
Key action

[V]	Limit movement to vertical direction only
[H]	Limit movement to horizontal direction only
[N]	Limit to 'normal' direction only (in/out)
[P]	Limit to perpendicular direction to hit object
[T]	Limit profile movements to tangent of pro files
[O]	Snaps to plane on which object was created
[X]	Disables snapping
[2]	Snaps to location on working plane
[3]	Snaps to location in 3D space, off working plane

Problems? For assistance, call Macromedia Technical Support on ☎ 0131 458 6766

MACROMEDIA SHOWCASE

Want a **different** perspective? Check out these **demos** of the finest **productivity** utilities **available** to humankind, **straight** from the studios of **Macromedia**.

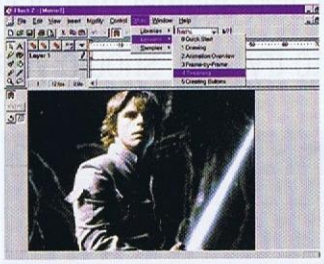


AUTHORWARE

This is a working model of the superb multimedia authoring tool, with which you create your own interfaces using colour images and sound. *Authorware* helps you make a full flow diagram of operations which your PC follows in order – which can include playing a sound, displaying a video clip or asking a user for input. It's a particularly straightforward but powerful way to build stand-alone front-ends for use in Windows. Many common CD-ROM interfaces are based on Macromedia's *Authorware* these days, including that of our sister magazine, *PC Review*.

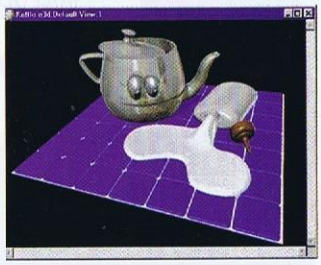
BACKSTAGE & APPLET ACE

Complete with text and image tools, *Backstage* enables you to lay out your own Web page. You can add hyperlinks to other Net addresses, while *Backstage* takes away all the tricky programming. Select **Backstage Designer** from the **Start** menu. If you're after tricky programming stuff and need a no-nonsense interface with which to configure Macromedia's *PowerApplets,* then you want *Applet Ace*. No HTML knowledge is necessary, because every portion of the configuration and testing is done via a user-friendly front-end.



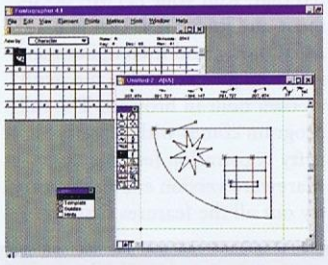
FLASH

Multimedia is a buzzword which both excites and confuses. Want to create an attractive on-screen masterpiece? As the friendliest way to get started, *Flash* enables you to create snazzy Web pages with pictures, sound and movies. It all runs like the most intuitive of art packages, and by starting up a new file, you soon see that a brace of neat authoring tools is hidden behind the paintbrush and pencil icons. You are able to use any image format, and embed sound files or animations, to make anything from an interactive Net page to a piece of modern art.



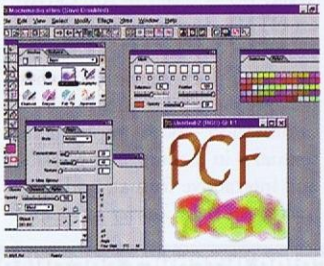
EXTREME 3D 2

Mastered *Extreme 3D* already? Hungry for more? You're obviously ready for version 2. This special try-out version is save-disabled, but all the major functions are here. Major updates include a fully re-written renderer to take advantage of the floating-point capabilities of your Pentium, plus a host of time-saving features such as mapping types and default lighting. You can now also create and animate organic metaforms and particle systems such as bubbles and explosions. To install, simply run **setup.exe** from the *\e3d2demo* folder on the disc.



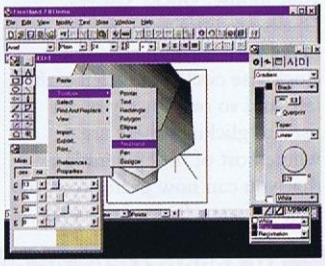
FONTOGRAPHER 4.1

Despite the fact that there are millions of typefaces available for use in your documents, there never seems to be exactly the right one for your needs. But the mighty *Fontographer* gives you the power to create the type of lettering you require. From the clear character map, you can zoom in on a letter, and design it totally from scratch using the various drawing tools. Stars, banners, lines and curves can be used to design any look you desire. Our team wasted an entire morning trying to create a hieroglyphic script. Or perhaps it was meant to be Klingon. Twisted imaginations, the lot of them.



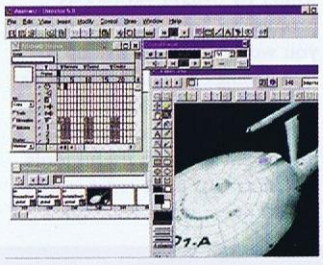
XRES 3

The powerful Macromedia brings you yet another glorious art and photo-retouching package. This demo has all the best art and drawing facilities, including felt pens, airbrush tools and some flashy colour options. The Save functions may be disabled, but it's so attractive you have hours of fun just colouring things in with the chunky crayons. And we love the calligraphy pens, which are fully intuitive to use, and also leave beautiful strokes just like the real thing. With this Xres 3 demo, you can examine a range of textures and filters, and see how they can improve your computer art.



FREEHAND 7

All the drawing tools you could ever need, plus some you've never heard of – that's *FreeHand 7,* and this is the interactive demo. You're only able to work in stylish black-and-white with this version, but it gives you a feel for the things to come, and all your drawings will look rather tastefully *noir*. An enormous number of geometric shapes can be designed; gradients and shades mixed, plus curves plotted from the fool-proof tool boxes. Unfortunately, the Save options are disabled here, but this is your big chance to see the latest Bend, Roughen, and Envelope functions in practice.



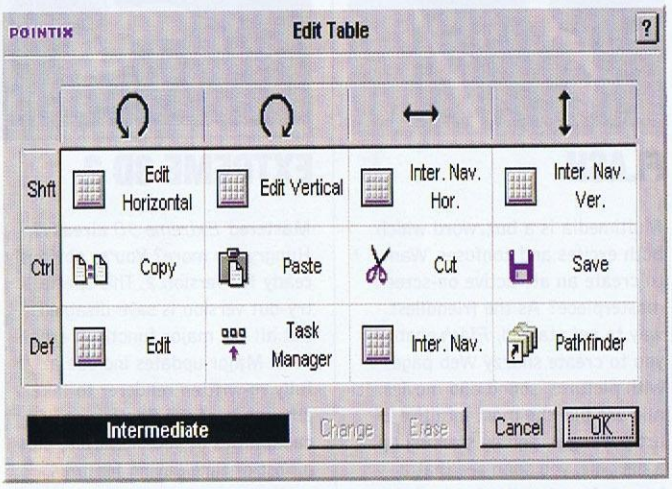
DIRECTOR 5.0

The ultimate in PC multimedia tools – this is the professionals' package. It's a utility which casts you as director in a colourful movie of your own design. It operates on several levels, enabling you to design bright presentations with a full musical score, moving images and even input from the user. *Director* is the basis for a thousand Critical List programs – *Sophie's World* on last month's CD is a superb example of what you can do with a little bit of imagination and a few hours to spare – and with this interactive demo you can start planning your magnum opus immediately.

Problems? For assistance, call Macromedia Technical Support on ☎ 0131 458 6766

SHAREWARE

We've scaled another mountain-shaped pile of shareware and selected the best for you to try, and, should you decide you like it, buy.

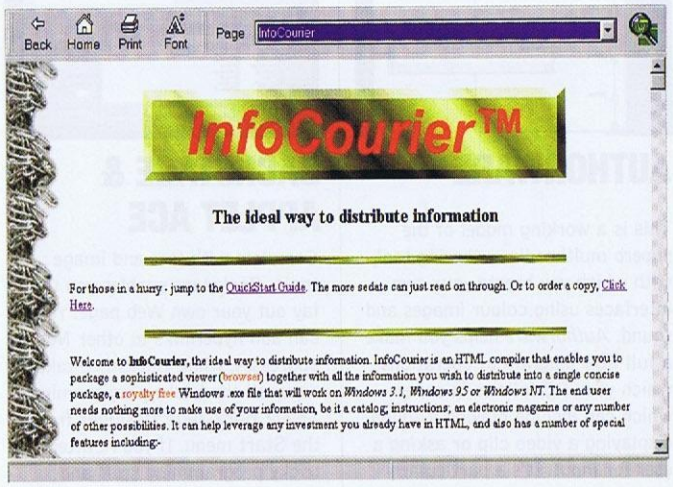


Now all those nifty little keyboard shortcuts are available at the flick of your mouse. It's not for those with sparodic nervous twitches, though.

Pointix 20

$14.95 by Pointix Corporation sales@pointix.com

MANY OF UTILITY PROGRAMS promise to "revolutionise the way you work", but few live up to that promise as imaginatively as this. Like most utilities, *Pointix* provides a variety of pop-up menus packed with useful tools and shortcuts – the twist is that these appear when you "glick" your mouse. Glick? Oh yes. Glicks are little gestures you make with the mouse: a quick clockwise circle, a fast left-right-left, and so on. Once you get used to glicking, there are a whole host of little operations that you can now perform with a single elegant flick of the wrist.



Knocking up a standalone hypertext document with built-in reader from standard HTML is as easy as getting fat in a cake shop, thanks to *InfoCourier*.

InfoCourier

£116 by Oakley Data Services ☎ 01889 565064

WHAT DO YOU GET IF YOU CROSS an HTML document with a portable browser? A standalone hypertext document, that's what. It's an ideal way to distribute information – both graphical and textual – in a compact, accessible and interactive format, and the makers of *InfoCourier* have spotted that. Run your HTML document and image files through *InfoCourier* and it compiles them into a single executable file, with its own built-in browser. The full program comes with a pretty hefty registration fee, but this shareware version enables you to try out all the features first.

WIRED WORLD AN ASSORTMENT OF SUPERIOR INTERNET SOFTWARE

COMPUSERVE

Once again, CompuServe is offering you a month's free membership, together with 10 hours free on-line time. Sign up using the software on this month's CD, and it's yours. Click on the Wired World icon on the CD interface, select **CompuServe**, follow the instructions, and you're away.

POINTCAST

Grab the latest news, sports, weather, lifestyle, and financial information over the Internet with *PointCast*. Use a direct non-modem connection (such as TP/ICP), CompuServe, the Windows 95 Dialer, or whatever, to find out what's happening in the world. The program is completely customisable, so you just get the information that interests you.

HTML ASSISTANT PRO 97

An HTML editor for experienced Web authors, *HTML Assistant* offers the most commonly used formatting commands, and dozens of other tags and special characters. Features include tools for backgrounds and colours, a spell checker, RTF file conversion, user-defined tags, frame creation wizards, a URL collection tool, a site assistant for transferring files, and a whole heap more.

FTP VOYAGER

This 32-bit FTP client program provides a user interface that's nearly identical to that of Win 95's Explorer to get and send files. Multiple files may be selected for transfer, including directories. The program saves Session Profiles so you don't need to remember complex FTP addresses, user IDs, or passwords, plus it comes preloaded with several popular FTP sites.

NETLAB

A veritable plethora of TCP/IP utilities are but a mouse click away. Use the Quote pane to retrieve profound sayings, the Finger, DNS, or Whois tabs to query users and domains, and the Time program to get the precise time and synchronise your clock.

ANAWAVE GRAVITY

This 32-bit Usenet newsreader makes accessing newsgroups easy. Features include background image decoding; article view option, a rule system for organising, prioritising, and focusing on news, plus ooh, loads more.

Problems? Turn to page two of Install for help on the five most common disc problems

BuzOf

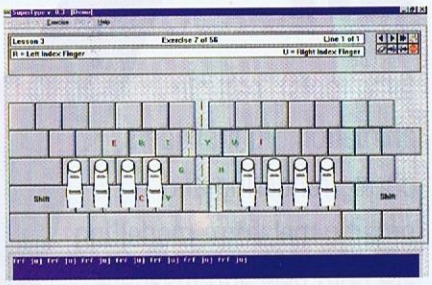
$15 by Basta Computing http://www.basta.com

THE APPROPRIATELY-NAMED *BuzOf* is another of those ingeniously different software utilities we like to incorporate into the Shareware section. Plagued by irritating pop-up dialog boxes, demanding you to press yet again the same blasted button you always press? Why can't Windows learn that you always want to press that button, and just do it for you? Well, now it can. Simply show *BuzOf* a dialog box, show it which button you would normally press, and from now on, whenever that dialog box pops up *BuzOf* banishes it automatically, by activating that button for you. Pure genius.

Supertype

£27.45 by Springsoft ☎ 01352 770049

FANCY DOUBLING YOUR typing speed? It could happen, you know. *Supertype* is one of the finest typing tutors around, and so easy to use that you can start learning how to touch-type instantly. *Supertype* comprises three modules, a main course that teaches basic skills and touch-typing techniques, a special exercises and corrections section for reducing erorrs, and speed exercises which are aimed at boosting your typing speed.



Type, type like the wind. Turn your two-fingered plodding into a blur of digits with *Supertype*.

ToolBar for Win 95/NT

Freeware by SBD http://www.execpc.com/~sbd

THIS IS GREAT FREEWARE MENU system for Windows 95. *ToolBar* places a row of menu buttons, each with an icon and program title, along the side of your screen. You can now organise your programs using the eight sets of available buttons, which you simply right-click to configure. *Toolbar* can minimise itself when a program is launched, or stay on top, and it comes absolutely loaded down with a myriad of other useful features and widgets.

SHAREWARE SMÖRGÅSBORD THE BEST NEW PROGRAMS

WINDOWS 3.1

Copy-Zit
Slice big files into lots of little files, then stick them all together again. Ideal for storing outsize files on diskette.

Sky Screensaer
View the sky from any point on Earth, complete with stars, planets and the Moon.

SmartSum
Some calculators have sophisticated mathematic functions. Some are programmable or highly configurable. *SmartSum* talks to you.

Windows Commander
A replacement for the boring old Windows File Manager, *Windows Commander* has two windows for easy file copying.

WiseBar
A Program Manager replacement with enhanced security features.

Z3DC Driver
An installable driver that uses Microsoft's CTL3DV2.DLL or CTL3D.DLL libraries to provide great looking 3D controls for all dialog boxes in *Windows 3.1*.

AscArt
Feed a greyscaled bitmap image into *AscArt*, and it cranks out one of those funny pictures made out of puncuation marks.

Tarot Pro 4
A desktop version of a card game played with the French Tarot deck. Almost certainly has nothing to do with worshipping Lucifer.

WinterTree Thesaurus
A standalone thesaurus for any Windows text application. *WinterTree Thesaurus* has 50,000 synonyms for over 20,000 key words, and can even offer suggested replacements for unrecognised words.

WINDOWS 95

3D Objects Screensaver
See 3D objects whirl, swirl and generally do their stuff in 68 different animated screens.

DLL Show
A small freeware utility that displays a list of all tasks and processes currently running on your Windows 95 system.

Commander Lite
A mega-useful shell extension for Win 95, fairly dripping with functions and tools.

Fast Return
Fast Return enables you to use crashed apps long enough to save your work.

Fiction Magician
All budding writers out there should stop budding at once and install *Fiction Magician*, a utility to aid the creative process. Character Development, Theme, Plotting – it's all here.

Idyle Phone Book Pro
This database keeps a record of all your contacts, and also plugs into the Internet, making for easy e-mailing etc.

ShoveIt
ShoveIt retrieves windows that have crept off your desktop, shoves obscuring toolbars out of the way, and generally helps out.

WinSafe 95
A useful utility which restores your system back to operating condition when you find yourself in Safe Mode or a crash.

WinXs
Those of you who spurn Win 95's decadent ease-of-use and convenience can now install this collection of powerful UNIX-style tools.

CD-Quick
Increases the performance of your CD-ROM.

THE HOSPITAL NOVACAINE FOR THE PC

DIRECTX3

Watch out! Microsoft's DirectX is essential for running most Win95 games, but if it conflicts with your graphics adapter you may find that Windows will no longer start up properly, or indeed at all. This problem is very rare, but seems to occur mostly with the ATI family of cards. To fix this problem you will need to start Windows in its special Safe Mode – just press [F8] when you see the "Starting Windows 95..." boot-up message, and choose Safe Mode from the menu that appears. When Windows starts, open Display Properties in the Control Panel, select Settings and press Change Display Type to re-install your adapter drivers.

DISPLAY DOCTOR

If you can't run a high-resolution DOS-based game, it may be because your graphics adapter isn't fully VESA compatible. Display Doctor will custom-make a UniVBE driver for your graphics card.

QUICKTIME

QuickTime movie drivers are required by almost all multimedia applications these days.

THUNDER TOOLS

Right-click a file in Windows 95 and you get a handy little menu. Thunder Tools adds a selection of extra-useful options and commands.

VIDEO FOR WINDOWS

Windows 95 users can skip this; their operating system comes with everything needed to view AVI files. Win 3.1 users: this doesn't mean you.

WIN 32S

Bring a little bit of 32-bit functionality to Windows 3.1. Win32s allows you to run certain applications and games on your trusty Win3.1 system.

WIN G

This was supposed to be a graphics turbo-charge for Windows 3.1, but in fact even a few Win95 programs won't run unless you have these drivers installed on your system.

WINZIP 6.2

If you use Windows and you use Zip files, you need WinZip.

Problems? Turn to page two of Install for help on the five most common disc problems

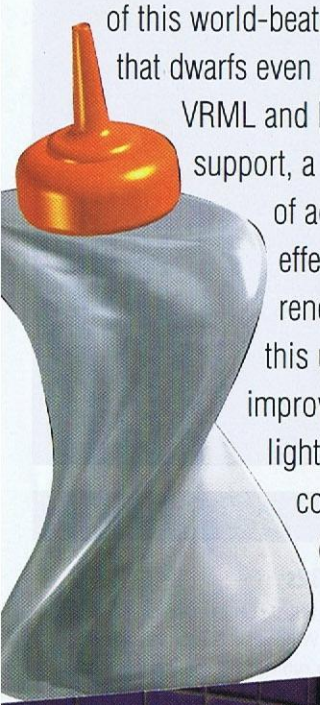
READER OFFER

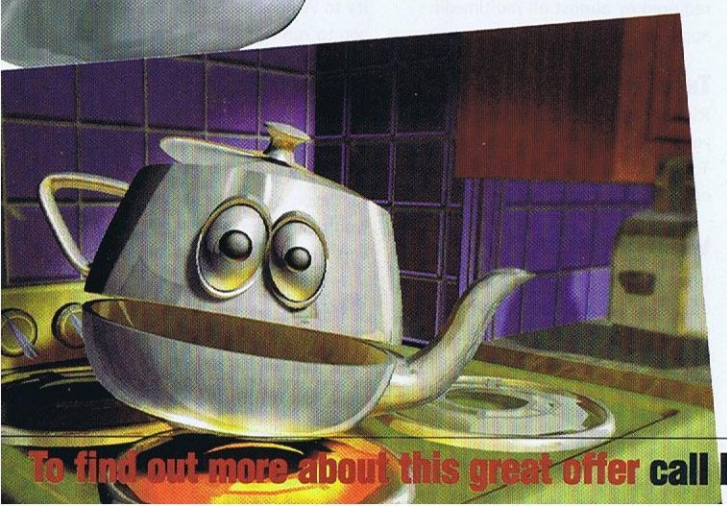
To order call ☎ 0181 358 5855

EXTREME 3D 2.0 UPGRADE OFFER

You'll have tried out Macromedia's *Extreme 3D* by now, and no doubt you'll have marvelled at the power of this professional-level 3D modelling package. It doesn't get much better than that. Unless, of course, you have *Extreme 3D 2.0* – the new version of this world-beating 3D tool. With a feature list that dwarfs even *Extreme 3D,* including Internet VRML and Direct3D support, a huge number of additional 3D effects and faster rendering, there's no messing with this upgrade. Features such as improved animation (with geometry, light, material and deformation controls), instant modelling (creating 3D objects from flat profiles using extrude and lathe tools), particle animation, light shaders, phong rendering and organic metaform modelling are both new and insanely useful. Sounds too good to be true, doesn't it? But it is true. In fact, the only thing that's more impressive than the huge feature list and phenomenal power of version two is the bargain upgrade price we're offering you. For the measly sum of £239, over £400 cheaper than the RRP, you can upgrade to the latest version of the very best 3D-modelling program, full and complete in every way. Is Macromedia mad or just generous? Imagine all the things you could do with a professional package of this quality? It's easy, it's great, it's the high Emperor of the 3D-modelling world. It's Macromedia *Extreme 3D 2.0.*

MACROMEDIA EXTREME 3D





To find out more about this great offer call Macromedia on ☎ 0181 358 5855

GAMEPLAY

The pick of this month's top games

52 Coming Soon

Bizarre chanting and prayers to the Gods of PC Heaven won't reveal the future as effectively as reading our regular omen-soaked section.

58 Reviews

Dungeon Keeper heads this month's all-star cast, rattling its keys and banging the cages of *Speedster, Redneck Rampage* and *Terracide.*

99 Tips & Tactics

Some call it cheating; others prefer to regard it as a combination of sheer guile and common sense. We show you how to deal with *Sandwarriors.*

James Binns
Editor

Time for a climb down. It's become fashionable in the computing press to make faces at, and fun of, developers whose games are late. And in many cases these games don't just miss quarters... they miss generations and formats.

But sometimes the sneering just has to stop. Our top game of the month *Dungeon Keeper* wasn't delayed because of lazy programmers, 3D card support issues, localisation for the world market or waiting for the pre-Christmas boom. Not a moment of the 18-month delay was wasted. It all went into the software itself. And at every level this is a lavish game. The wait was well worth it. Just imagine what it could have been if we'd waited another 18 months! We salute you, Peter Molyneux. Check out our interview with the main man on page 8.

With a game like *Dungeon Keeper* in the offices it's very hard to keep our focus! However, the hotspots to look out for include the enthralling *Sentient* a brave attempt at trying to define a new game genre – check out the chat-'em-up on page 66. You should also read our reviews of the infamous and grotesque *Carmageddon,* which narrowly misses *PCF* Gold on page 78, and the redeeming *Star Trek: Generations,* which washes the bitter taste of MicroProse's earlier effort a *Final Unity* into oblivion.

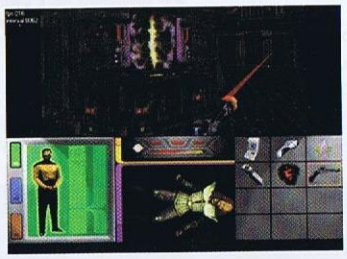
JAMES BINNS

58 Dungeon Keeper

Peter Molyneux thought up *Dungeon Keeper* when he was nine, started work on it in his sixth year study periods, and now, 59 years later, it's finally finished (maybe). Read the authoritative review of his undefinable masterpiece.

78 Carmageddon

Drive at ludicrous speed, splatting pedestrians on the road. Or play *Carmageddon,* and don't go to jail.



84 Star Trek: Generations

With *Star Trek: Star Fleet Academy* still in the pipeline we check out this latest offering from MicroProse.

PREVIEWS & REVIEWS

52 Previews including: Dark Colony; Ignition and Manx TT
58 Reviews
58 Dungeon Keeper
64 Nitro Racers
66 Sentient
68 Speedster
72 QAD
74 Terracide
76 Redneck Rampage
78 Carmageddon
82 British Open Golf
84 Star Trek: Generations
89 Gameplay Extra including: Axelerator; Lomax; Actua Soccer Club Edition; Pinball Power Pac; Reloaded
96 Price Busters including: Duke Nukem 3D; Ultimate Doom; Ultimate Soccer Manager 2; Doom 2; Heretic; Williams Arcade Classics; Mortal Kombat 3; MegaTraveller 2; Ascendancy and Deadline
99 Tips & Tactics

RECOMMENDED PC FORMAT GOLD AWARD ★★★★★ RECOMMENDED

The *PC FORMAT* review policy

Here at *PCF* we pride ourselves on providing the best buying advice in the business. If a game's no good, we tell you. We won't give it a higher mark just to avoid upsetting a software house. We only ever review finished games, which means that, while ours might not be the first review, it *will* be the most accurate – the game we review is the one you buy in the shop. It's also a considerable achievement for a game to score in the 80s. For one to score 90% or more, it has to be adored by the whole *PCF* team *and* run happily without the aid of a high-end Pentium processor and a souped-up machine.

Reviewer spotlight

Dave Bradley

Darling Dave loved games so much as a child that he sold the family car to fund his *Gauntlet* habit. This resulted in him never learning to drive. Having seen his attempts at *Carmageddon,* we're glad he'll never grace our highways with his insane driving skills. Because he's rubbish.

COMING SOON

IT'S A STRANGE FACT THAT WANTING CAN BE BETTER THAN actually having. Considering how much fun we've had playing these demos and betas, you must be exploding with excitement.

ETA

There's so much to look forward to...

GAMES TO DIE FOR THIS SUMMER

ACTUA GOLF (Gremlin)
☎ 0114 275 3423
Polygonal golf sim

ALPHASTORM (Psygnosis)
☎ 0151 282 3000
Space shoot-'em-up

ATLANTIS (Cryo)
☎ 01869 345 928
Set in the lost continent

ATOMIC BOMBERMAN (Interplay)
☎ 01628 423666
Awesome multiplayer action

BALLS OF STEEL (GTi)
☎ 0171 258 3791
You'll need them for Apogee's pinball game

BATTLECITY (E-On)
☎ 0990 133 007
On-line urban mayhem

BEASTS AND BUMPKINS (EA)
☎ 01753 549442
Strategy/Tolkien-style action

BETRAYAL AT ANTARA (Sierra)
☎ 01189 209100
RPG sequel to Krondor

BOOT CAMP (Monolith)
☎ 0114 2753423
Military training sim

BUST-A-MOVE 2 (Acclaim)
☎ 0171 344 5000
Addictive puzzle by Taito

CAPITALISM PLUS (I-Magic)
☎ 01344 409 399
Mergers and monopolies

CAPTIVES (Sierra)
☎ 01189 209100
Crusader meets *Lemmings*

CONQUEST EARTH (EIDOS)
☎ 0181 780 2222
Strategy wargame

THE CROW (Acclaim)
☎ 0171 344 5000
Based on the comic book

DARK COLONY

Price: £39.99
Due out: September 1997
By: Gametek
☎ 01753 854 444

What is it?

A real-time strategy game set on the surface of Mars, where those pesky pointy-headed Grays rival human colonists in the race for precious resources. The discovery of a new element, Petra-7, bubbling up from the Red Planet's core spurs exploration and discovery, but when night comes all the techno-hardware the Earthlings have will be needed against the aliens' onslaught. Conducted in true *C&C*-style, *Dark Colony* is the battlefield management sim for folk who want to get revenge for 50 years of post-Roswell trauma.

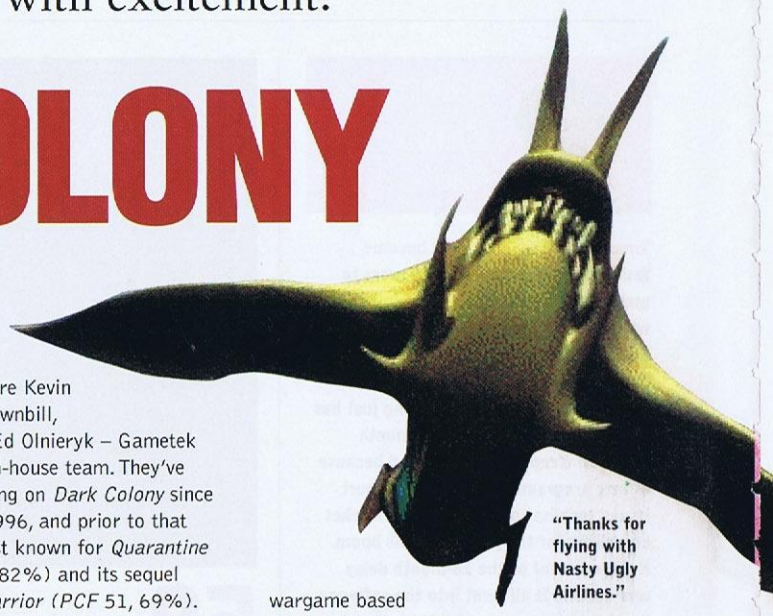
The humans have planes, but the aliens have giant bat-things with huge fangs.

What has Gametek done before?

The developers are Kevin Hoare, Andy Brownbill, Greg Bick, and Ed Olnieryk – Gametek Canada's in-house team. They've been working on *Dark Colony* since January 1996, and prior to that they're best known for *Quarantine* (*PCF* 39, 82%) and its sequel *Road Warrior* (*PCF* 51, 69%).

Behind the scenes...

The team are very aware of what Hoare calls "the alien folklore culture", and are avid watchers of TV shows such as *The X-Files* and *Dark Skies*. Being big fans of tactical games (*Warcraft 2* is an office favourite) it was their intention from the very beginning to create a wargame based on a mysterious alien contact scenario. All the art and design has been worked on in house with the goal of creating a unique landscape which feels ominous and desolate. But, as Brownbill explains: "Terraforming becomes part of an expanding plot, so it's really a constantly developing landscape."



"Thanks for flying with Nasty Ugly Airlines."

The two sides are kitted out with distinctive equipment and buildings. The humans are technologically advanced, using robot vehicles and all manner of mechanical gizmos, while there is a "genetic, organic feel to the alien side".

Hoare continues: "Each army will approach the campaign differently, and often there will be sub-goals with real-time feedback during a battle." Much of the combat will be for Mars' precious ores and you will be forced to defend your

Superior technology is the best weapon with which to fight the Grays.

During the battle scenes, expect decomposing bodies and enormous explosions. How pleasant.

mining sites. A unique concept is that the Petra-7 vents are "like little active volcanoes" which can burst open when a mission is already underway. "You won't always know when resources are going to become available to you," says Hoare.

"We didn't want just another build-and-shoot battleground," insists Bick. The style of play will be very mission-specific, and as a multiplayer game the team is hoping for a "high-impact experience". Many popular wargames can be unbalanced because you can concentrate on building one type of unit at the expense of others, then send out huge squadrons of them. Ultimately games like this can descend into one big scrap between similar-looking units in the centre of the playing area. Coupled with true character visibility – you'll only know what's in the sphere of observation around each of your men – all the troops in *Dark Colony* will be interdependent and tactics will rely on providing proper cover for each of them.

It's a bit like the ship from the new *Space Truckers* film. Only a different colour.

Why might it succeed?

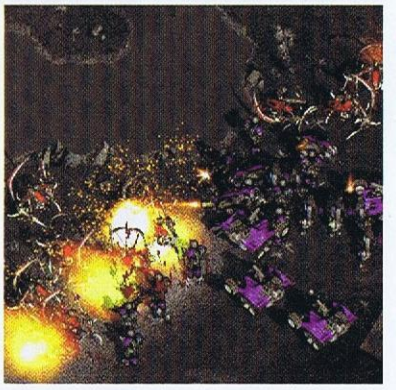
"We feel one of our strengths is attention to detail," continues Greg Bick. "We've aimed for an intense graphical look, with distinctive architectures and vehicle types. Decomposing corpses, blood, explosions and electric fires make it a more satisfying multiplayer experience." Hoare is also confident about the single-player game: "We're very happy with the advanced AI – the computer does its own scouting and will act on the player's weak points. It will try to sneak past things which it doesn't consider a threat". There will also be different movement options for your own troops. A handy assault mode means your men will stay alert as they move from A to B, stopping to attack passing enemies. "You won't need to constantly babysit your troops like you do in other strategy games," adds Hoare.

There will be LAN and Internet support for up to eight players, and on the hardware side *Dark Colony* will be one of the first strategy games to be MMX-optimised. The team also reveal that it's already planning mission packs and a possible sequel for the near future.

Why might it fail?

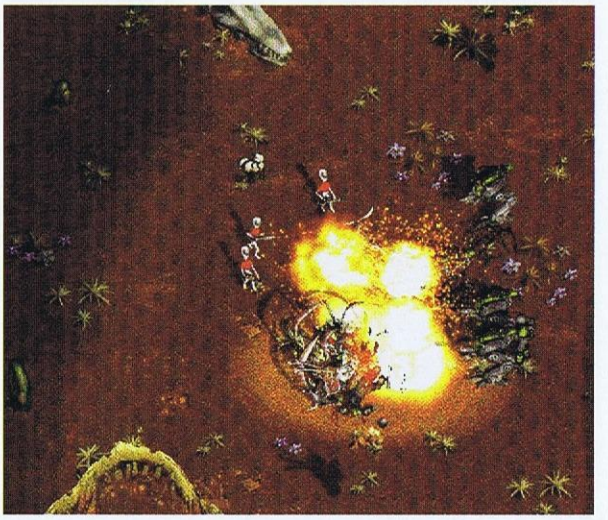
Although Kevin Hoare insists that Gametek's *Dark Colony* comes as "more of a next-generation strategy game", there are already a range of established real-time combat sims, for instance *Command & Conquer:Red Alert* (*PCF* 65, 90%) and *Warcraft 2: Tides of Darkness* (*PCF* 53, 90%) – comparisons will be inevitable. In addition, *Conquest Earth, Pax Imperia, Starcraft,* and *Dark Reign* are all due to appear on the market this year, so the shelves should be heavy with sci-fi themed wargames.

Those Grays may look puny but they're all genetically enhanced, with mean bio-weapons.



The Gametek team is planning some intense visual effects for the big battle scenes.

Progressing deeper into the game, the plot thickens as the colonists start to terraform the surface of Mars. It's fair to say the aliens won't like it.



Night is the most dangerous time to be a human visitor to Mars. Here, some Gray boy scouts sit around a camp fire roasting earthling bodies.

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☎ 01932 22 22 32
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ETA

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☎ 0171 258 3791
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Much-awaited sequel

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French action adventure

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MMX-enhanced game with awesome lighting effects

RIVERWORLD (Cryo)
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Based on the sci-fi books

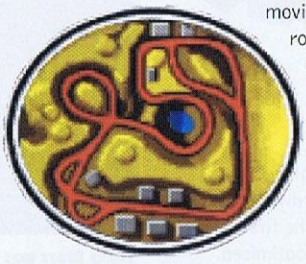
IGNITION

The bus may look silly, but it's great for ramming people.

Price: £TBA
Due out: July 1997
By: UDS/Virgin
☎ 0171 368 2255

What is it?

It's an arcade driving game, much like Psygnosis' *Speedster* (see page 68), only better in every way. Featuring a super fast 3D engine, big, brash graphics, superbly designed tracks and a huge selection of high-performance vehicles, *Ignition* looks more like a console classic than a PC game. Think *Speedster's* top-down perspective, *Carmageddon's (PCF 71, 89%)* over-the-top car-physics, and *Micro Machines 2's (PCF* 47, 78%) 3D-style jumping and skidding around. It's like that, only better.



Each track has a few shortcuts to help impatient drivers avoid traffic lights.

What has UDS done before?

The Swedish developer, UDS, was established in 1994. There are currently 15 employees, all products of the thriving Scandinavian graphics-demo scene. Their experience with cutting-edge 3D programming is tempered by an admirable pursuit of PC gameplay excellence. Managing Director Peter Zetterburg told *PC FORMAT:* "Our ambition isn't to make games that are fun; it's to make games that are *great* fun. With *Ignition,* we've tried to create a Nintendo-style game. We're aiming to create something with the clean purity of a Nintendo title." And you must agree that this is an admirable pursuit in a market saturated with strategy games, flight sims and *Quake* clones.

Behind the scenes...

Initially, the most impressive thing you notice about *Ignition* is the stunning 3D engine. Codenamed Lisa (although nothing to do with Logarithmic Instruction Set Analysis, rather the name of the programmer's cat), the engine creates the fastest and smoothest racing experience since UBI Soft's *POD (PCF* 68, 83%). And you don't even need a 3D graphics card. The flexibility of the engine is demonstrated by some of the complex tracks available. As well as looking absolutely delightful, with waterfalls, sheer cliff edges, forests and fields, moving hazards such as rolling rocks, moving trains and even tornadoes pop up with alarming regularity.

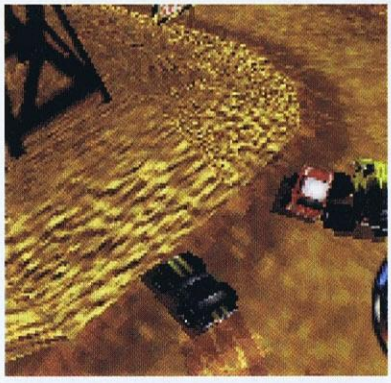
Why might it succeed?

Because, from what we've seen so far, it's great. Too few PC developers concentrate so much on creating an enjoyable gameplay experience, and those that do often end up neglecting visual splendour. UDS has got both angles covered, and on the evidence of the early beta we've been playing, their approach has reaped dividends.

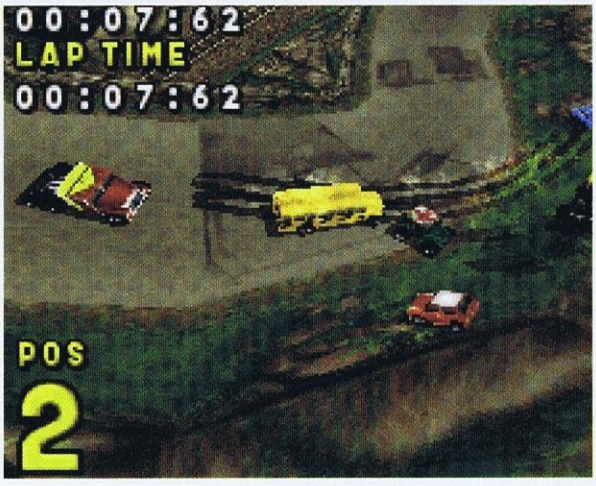
Why might it fail?

Punters forking out £30 or £40 for a PC game are usually looking for a deep gameplay experience, which this game simply will not provide. The unabashed fun of *Ignition* might be too bizarre a concept for many gamers to grasp. So we'll tell you now: it's great the moment you start it up, and it will be just as enjoyable for a good time hence.

Set in a different part of the world, the tracks range from the jungle to a Sainsbury's car park.



Look at the ickle cars. They've got ickle drivers, with ickle driving gloves and ickle booties.



The AI hasn't been fully tweaked as yet, resulting in some bizarrely inept cornering manoeuvres by the computer-controlled cars. Dumbasses.

Driving through Inca Temples shows a disrespect for ancient cultures. Also, driving down those big steps spanks your suspension mercilessly.

It's a good idea to follow the racing line when approaching a corner. Otherwise, it's motorbike and jam sandwich.

MANX TT

Price: £TBA
Due out: Summer 1997
By: Psygnosis/Tantalus
☎ 0151 282 3000

What is it?

The PC version of the coin-up smash powerbike racing game. In the arcade you sit, legs astride a giant plastic bike, watching as the classic Isle of Man TT race course flashes before your eyes in glorious 3D smooth-o-vision. The PC version is exactly the same, except you use a joystick and sit on a chair (unless you can park your bike in front of your PC). The actual race is fast, exciting and highly dangerous – *Manx TT* recreates that just perfectly.

What has Tantalus done before?

This Australian-based programming team specialises in arcade and console game conversions. It worked on *Area51* for PC, PSX and Saturn, *Krazy Ivan (PCF* 63, 73%)PC and *Wipeout 2097* for the Saturn. While its experience with the PC isn't extensive, its console pedigree promises a level of arcade quality all too rare in PC games. Surprisingly, although the arcade version is a Sega machine, the PC game will be distributed by Psygnosis, making these Liverpool-based publishers the major player in the PC race game market with *F1, Wipeout 2097* and *Manx TT* all out soon.

My, what a large chimney you have.

Behind the scenes...

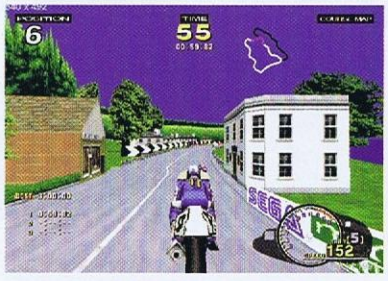
Tantalus has been aiming for a smooth arcade experience and is providing support for Direct 3D, Mystique and 3DFX cards to get those graphics shifting at 30fps. However, it promises that even on an unaccelerated P90, the game will run at a more than acceptable 15fps. Graphically, the PC version will be the best of all the conversions, colour depth (3D-accelerated versions) higher resolutions and than the Saturn port. To fully appreciate the splendour of the graphics, there will be four tracks, a choice of eight bikes and three hidden superbikes. Finally, a special cheat mode turns all the bikes into sheep, complete with relevant sound effects, for added pleasure...

Why might it succeed?

The Isle of Man TT race is one of the most exciting races in existence, and the arcade version of it was an absolute blinder. If it's anything like that, it's bound to be a winner. The partially complete version we've played already looks like it could fulfil all its promise.

Why might it fail?

There's a glut of racing games available at the moment, including *Pod, Wipeout 2097, F1 and Moto-Racer,* another top-notch motorbike racing game. Even with the sheep racing component, *Manx TT* is going to have to work hard to distinguish itself in this field. Also, there's little doubt that this kind of game benefits massively from using a 3D card, and those without such a setup might not bother with it.



Even without a 3D card, *Manx TT* should move at a good old pace, but 'only' in 256 colours.

ETA

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Medieval wargame

SHANE WARNE CRICKET (Audiogenic)
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SHIVERS 2: HARVEST OF SOULS (Sierra)
☎ 0118 920 9100
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SLAM 'N' JAM (BMG)
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SOCCER NATION (Crush)
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STAR COMMAND (GTi)
☎ 0171 258 3791
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☎ 01628 423 666
Need we say more?

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☎ 0171 344 5000
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TENNIS ELBOW (GOTO)
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THIRD MILLENNIUM (Cryo)
☎ 01869 345928
World problems next century

TRASH IT (GTi)
☎ 0171 258 3791
Hammer puzzle action

UPRISING (Studio 3DO)
☎ 0181 296 1949
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VIPER (GTi)
☎ 0171 258 3791
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VIRUTAL FIGHTER 2 (Sega)
☎ 0181 995 3399
Enhanced 3D violence

VIRUS (Telstar)
☎ 01932 222232
Descent-style PC combat

X-CAR (Bethesda)
☎ 0171 368 2155
3D futuristic racing game

X-COM APOCALYPSE (MicroProse)
☎ 01454 893893
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Open terrain combat

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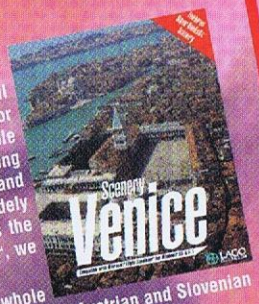

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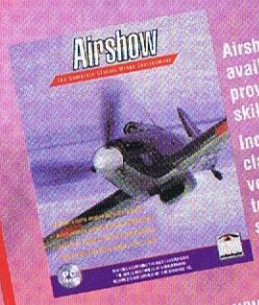
LAGO LOOKING AHEAD



Airshow is probably one of the most remarkable enhancements available for Microsoft Flight® Simulator™ for Windows® 95. It provides everything a pilot needs to experience the thrills and skills of an actual airshow – be they novice or expert.

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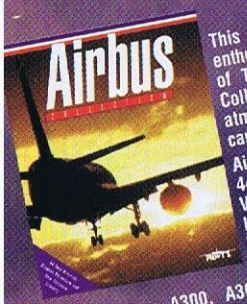
COLORADO technologie



This is the complete collection for all airline enthusiasts. With detailed aircraft, superb scenery of Toulouse and a challenging adventure, Airbus Collection provides everything you need to experience the atmosphere and environment of the the aeronautic capital of Europe.

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Comes ready to fly out of the box for Flight® Simulator™ for Windows® 95 (or v5.1 with Flight shop).

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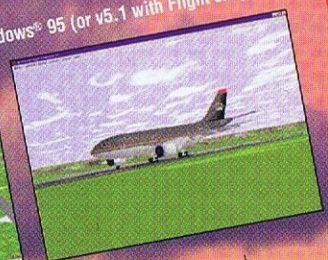
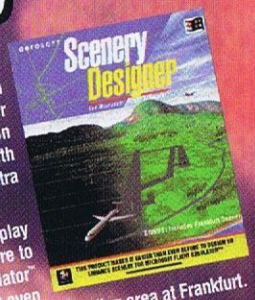


PILOT'S



Have you ever yearned to fly down your own high street? Did you ever think that you could improve on the standard scenery provided with Microsoft® Flight® Simulator™, or even extra scenery you've bought?

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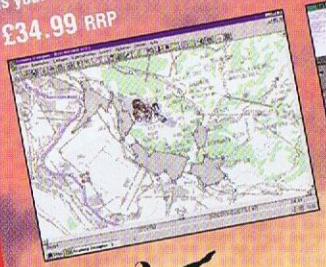

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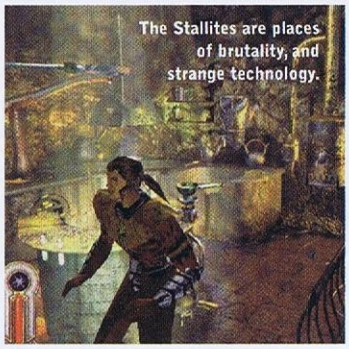
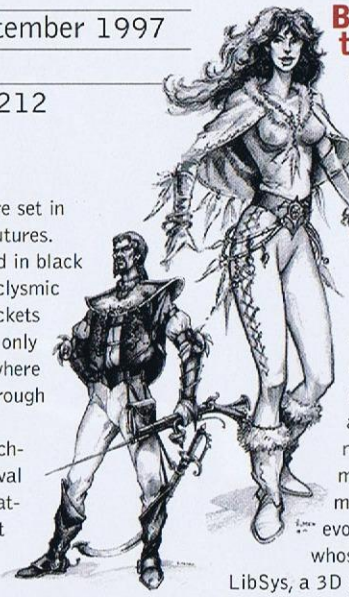
DARK EARTH


The Stallites are places of brutality, and strange technology.

Price: £TBA
Due out: September 1997
By: Kalisto
☎ 01435 862212

What is it?

A 3D action adventure set in the darkest of dark futures. The Earth is shrouded in black dust following a cataclysmic meteor storm and pockets of civilisation survive only in the remote areas where a little light filters through the dense clouds. The resulting society is technological and mediaeval at the same time, creating a game world that is sci-fi swords and sorcery at its best.


The Kalisto team has created a universe of characters and ideas.

What has Kalisto done before?

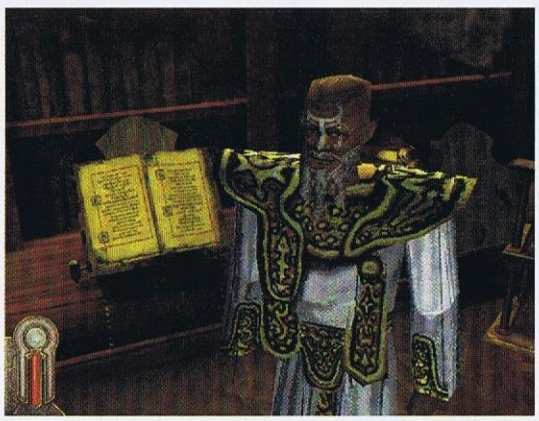
Formed by Nicolas Gaume in 1992, Kalisto has been through several incarnations. First known as Atreid Concept it hammered out titles for the Mac, before becoming part of Mindscape. Mindscape Bordeaux, as the little French company was known, was working on *Dark Earth* and *Ultimate Race* – a super-fast racing game for the PC which was bundled with many 3D card purchases recently – when it went independent and became Kalisto. *Fury of the Furries* (*PCF* 29, 77%) and *Warriors* (*PCF* 45, 84%) come from these stables.

Behind the scenes...

Dark Earth features a complex and intricate environment. A whole mythology has been created, and Gaume's team are obsessed with devising a real history for their alternate future, even on subjects only barely touched on in the game. Religious beliefs, cities (called 'Stallites'), buildings and characters are fleshed out down to the most intricate details. "The moving target of technology makes for a constantly evolving market," says Gaume, whose team of 70 people created LibSys, a 3D game engine which they use – suitably tweaked – for many of their games. It's been evolving for over a period of four years, and for the last two the fantastically rendered world of *Dark Earth* has been the focus of development.

Why might it succeed?

Because it already looks incredible. The visuals are finely detailed and smoothly animated, cramming the screen with locations full of gloomy atmosphere and living entities. The gameplay is action-orientated and there are some really engrossing combat sequences to engage in, but the fastest route to uncover the unique plot is through communication and puzzle solving.


Librarians in the far future will be exactly the same as they are today, only they'll be forced to wear gold-plated body armour.

Why might it fail?

Don't judge a book by its cover. Attractive presentation isn't enough to make people keep playing and neither is a good yarn. *Dark Earth* looks promising, but many good-looking adventures are prone to linearity. The gameplay has to be right for you to want to explore the 3D world to its fullest, and the environment has to be more than just decoration – there will need to be a decent sense of interaction.

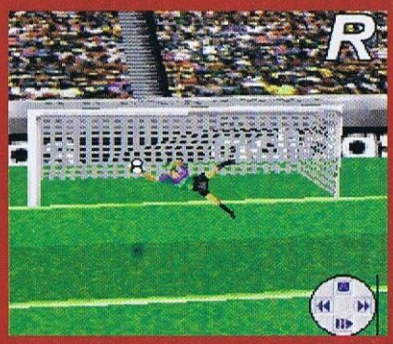
Development hell

Late? That's three times this week young man. A note will go home to your parents.

With *Warcraft 2* (*PCF* 53, 90%) flying high as one of the most popular real-time wargames, designer **BLIZZARD** is experiencing delays with their big plans to make it fly even higher. The mighty ***STARCRAFT*** – at first promised for July – has now slipped to the end of the year, following perfectionist programmer Bill Roper's attempts to "beef up" the AI. With three different races battling it out for **GALACTIC** dominance, they're keen to get the combat routines right in time for an **XMAS** release.

CONTACT BLIZZARD
ETA WINTER 1997
☎ 01616 332233 £TBA

May was the original target for this PlayStation cross-over, which features the dulcet tones of Brian Moore. Widely regarded as the best console footy game around, the in-house **PSYGNOSIS** team has taken two months longer than expected to bring it to the PC. But ***ADIDAS POWER SOCCER*** has been out on the PlayStation since Spring 1996, and the 1997 update is already available – surely it shouldn't be taking so long to convert a finished game to the PC? Apparently it's all the fault of those perennial pesky saboteurs, **'BUGS'**.



CONTACT: PSYGNOSIS **ETA:** AUGUST 1997 ☎ 0151 282 3000 £TBA

Renaming itself Eutechnyx after a break away from publisher Merit, the team responsible for 3D adventure ***SATO CITY*** has put back the release date from Autumn 1997 to "sometime in the future". Spokesman Kev Shaw claims that it's all part of their plan to make the game more action orientated. "We want to make it more exciting," he says, and adds that a redesign of the chief character, Skinner, is also on the cards. The **MANGA** look and 'dark future' style will remain.

CONTACT: EUTECHNYX **ETA:** END OF THE YEAR ☎ 0191 460 6060 £TBA

If you're short on patience then feel free to skip the rest of the review in the knowledge that *Dungeon Keeper* is nothing short of brilliant

DUNGEON KEEPER

£39.99 Electronic Arts/Bullfrog ☎ 01753 549442

Strategy

No game has been so eagerly awaited for so long, by so many. But at last Peter Molyneux is ready to bid you welcome to his world – a dark and nasty subterranean domain of gleeful evil. Your host: **Jim McCauley.**

Who wants to be the hero? Not us, especially if the alternative involves taking those pesky heroes and subjecting them to all manner of interesting deaths. Nya ha ha haaa!

Naturally loquacious types that we are here, with an average vocabulary on par with the entire contents of the *Concise Oxford English Dictionary*, it's a painful experience when we find ourselves blurting out meaningless diphthongs when put on the spot to explain what's so good about *Dungeon Keeper*. But having spent too long in the company of this masterpiece than is (a) strictly necessary; and (b) good for your health, one's brain is awash with images, intellectual premises and recollections, all of them positive in the extreme.

Bear in mind it's nigh-on impossible to organise almost a week's worth of *Dungeon Keeper* into something intelligible in just four pages. If you're short on patience then feel free to skip the rest of the review in the knowledge that *Dungeon Keeper* is nothing short of brilliant, and that whatever your fave game type you will love, worship and possibly become *Dungeon Keeper*.

There's a blue circle near the beginning of this review, attempting to sum up this title in one tiny media-friendly soundbite. It says Strategy. It's shallow. Ignore it. We put it there as an instant indicator, but in this case it's too small to encompass the truth. Something closer would require a much larger circle, containing the less snappy phrase: "Every Bullfrog game ever, mixed together in one all-encompassing parcel that will take over your life, given half a chance."

RECOMMENDED PC FORMAT GOLD AWARD ★★★★★ RECOMMENDED

It contains elements of *Populous*, *Populous 2*, *Syndicate*, *Theme Park*, *Gene Wars*, *Magic Carpet*, *Magic Carpet 2*, *Syndicate Wars* and *Theme Hospital*. All right, we've missed out *Hi-Octane* (*DK* doesn't contain naff flying cars) and *Creation* (*DK* has actually been completed). It's a God game like *Populous 1* and 2. It's a management game like *Themes Park* and *Hospital*. It's a build-up-your-territory-and-steal-your-oppo's-game like *Magic Carpets 1* and 2. It's an amoral (actually, immoral is closer to the truth) game of commanding your evil troops, like *Syndicate* and *Syndicate Wars*. It's a mess-around-with-the-gene-pool, like *Gene Wars*. It's a toast rack! It's a power drill! It's a thousand games in one!

Which is enough to make even the most hard-nosed and experienced gamer throw his hands up in the air and admit defeat without so much as a look at the game itself. And truth to tell, on the surface *Dungeon Keeper* looks ➡

Lots of spacious lairs are a must for any serious dungeon keeper, because many of your denizens simply won't share the same room. *You* try getting a vampire to bunk down with a warlock...

➡ fiendishly complicated. Just beneath the surface is the suspicion that, having spent four years in gestation, it's going to be another *Battlecruiser* with more going on than you can keep track of. It's scary – what if Bullfrog has become so involved in *Dungeon Keeper*, adding as much detail as possible, that it's lost sight of ensuring it's still a great game?

Thank God that this isn't the case. And then kiss goodbye to your God and embrace the dark side of omnipotence, omniscience and every other piece of theologian drivel. Because evil rules and you get the chance to emanate evil from every pore, nerve and fibre. Didn't you always get to a point in *SimCity* where you just *had* to drop an alien on your townsfolk? We know that you couldn't resist building a stand purveying nauseatingly sweet and sticky snack treats right next to your *Theme Park* rollercoaster. And we're certain you wished that there was a wider selection of civilians to gun down in *Syndicate*. The problem was that acting out the PC equivalent of pulling the wings off flies usually resulted in failure (or complete indifference and unwanted police attention in the case of *Syndicate*). *Dungeon Keeper* gives you a new perspective on the nature of good and evil, straight from the premise that you're on the dark side and up against those irritating heroes.

Whatever your chosen game type you will love, worship and possibly become *Dungeon Keeper*

From the very beginning you're trained in the ways of evil – even when you just have a single room and a few imps ready to obey your every command. Whereas in any other game you'd encourage them to work harder by giving them money or special treats, in here you treat them like the scum they are and slap them around (literally) until they pull their socks up. Try not to kill them by accident though – imps are the key to the success of your dungeon. Tell them to dig out a room and they dig it for you, send them out mining for gold and they retrieve it, never so much as considering the possibility of lining their tiny pockets and doing a runner. Your imps are loyal, so reward their faith by torturing them often.

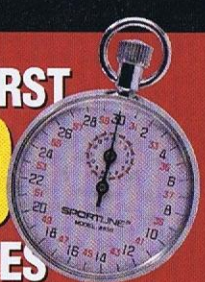
As your imps do all the hard work for you, you need never get stuck in the rut of confusion over what's going on, even though there really is a lot happening. Four training dungeons guide you through all you need to know about running a successful underworld, with pots of on-line help to prevent you from getting truly lost. From your first attempts at carving out a new room through to the moment where your dungeon sprawls over a massive area with a huge population of assorted monsters, you're in no doubt what to do. The learning curve manages to feel both incredibly steep and amazingly gentle – you feel as if you've managed to pick up all the essentials in just under five minutes.

So *this* is how a beetle sees the world. Bear that in mind next time you plan to crush one into the earth with your hob-nail boots.

You haven't. Look at your watch – it's probably been something in the region of five hours. This title is nothing short of enthralling and engrossing, and it's no exaggeration to state that the hours do pass like minutes without ever leaving you twiddling your thumbs and waiting for something to happen. Even if you're not under attack from enemy dungeon keepers or well-meaning adventurers you still have your hands full expanding your dungeon, smiting any denizens that you feel are slacking, and pumping gold into the task of training your monsters, researching new spells and building traps, doors and all those other important things that a good dungeon needs.

Should it become too much for you, fear not. This title features a variety of computer-assisted modes that can give you as little or as much help as you feel you need, and we reckon this throws it wide open to every aspect of the gaming public. If you're a battle-worn RPG fan you'll be happy to do everything yourself, while those of you who believe that life games begin and end with *Quake* would do well to leave as much as possible to the PC and play *Dungeon Keeper* as a first-person blaster. You can seize control of any

THE FIRST 60 MINUTES



Evil never sleeps. Certainly not for the first hour of in your dungeon, and maybe never again. Welcome to the wonderful world of insomnia!

1 Starting with the dungeon essentials – that glowing thing in the middle is the heart and gathered round it are four imps. Clicking the mouse on any of the surrounding earth earmarks it for excavation, so point at what you want to be dug out.

2 Not that you want to excavate just anywhere – you need some method to your badness. Look around your local environs and you'll find what you need to get your imps' eyes gleaming – a rich seam of gold. Set them to work on retrieving it.

3 Put your gold into a treasure room and then your wealth starts to increase. Select an area three by three, and when your imps have dug it out and click the treasure room icon and each square of the new room to do business.

There's nothing so gratifying as the sight of the battered corpse of an adventurer who should have known better. Especially when seen through the eyes of a giant fly.

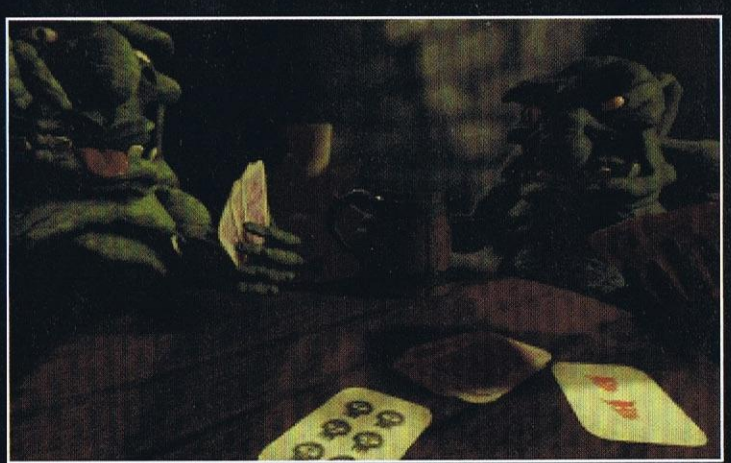
particular creature (down to the chickens that your dungeon occupants eat), then see the dungeon through its eyes and do everything that it would do under its own control. All right, it's nowhere near as rewarding as trying to do everything, but it does at least give you a taste for what's going on and maybe inspire you to have a go at taking the reins.

Everything about *Dungeon Keeper* is dazzling – it's been a ridiculously long time coming, but it's evident that not a second has been wasted. It all works beautifully and looks equally gorgeous – you initially see your world through a *Syndicate Wars*-style isometric viewpoint, which can be rotated and scaled as much as you like, but Bullfrog has also included a top-down view which can be less confusing. No matter how packed your dungeon is, it's easy to get a grasp of everything that's going on – you can see what your monsters are thinking and how powerful they are. If they simply refuse to do what you want, just pick them up and put them in the right place until they get the right idea. Then slap them a bit until they know in no uncertain terms just what's expected of them. Discipline is the key.

The learning curve manages to feel both incredibly steep and amazingly gentle

But damn it, we're almost out of space and there are still so many good things we want to say. The problem is that there's nothing wrong with it at all, and more to the point there are so many great things about it to point out. We're talking about the excellent monster AI, the dynamic lighting, the huge variety of spells and traps that you get to play with, the fact that if you play in first-person mode you get a viewpoint specific to your chosen monster (such as a compound effect if you're a fly). We're talking about the floating help that enables you to keep track of what's what, the pervading sense of sick humour (such as the Dark Mistress character who thrives on torture and punishment), the secret levels, the awesome challenge that will keep you playing for a long, long time. We're talking about the multi-player mode that enables you to specify a squad leader, possess it and then go into battle with a legion of hell spawn behind you.

We all know that the devil has the very best tunes, and we suspect that he not only supplied Peter Molyneux with his Bullfrog swan song, but also transcribed the full orchestral arrangement and sat at the mixing desk for the duration of the 12-inch mix. *Dungeon Keeper* is faultless, gripping and it will destroy your social life for the foreseeable future. It rocks, it rolls and it rules. Just buy it and embrace the dark side, all right? You know it makes sense. PCF



They might be utterly loyal to you, but your imps are likely to skive off work as soon as they think your back's turned. Reward their indolence with a few hefty whacks.

Revel in true nastiness like this gratuitous display of nipple piercing. Ouch!

Looking elsewhere

Well, if you absolutely *have* to, we reluctantly point you towards:

SYNDICATE WARS
£39.99 Bullfrog/EA *PCF* 62 92%

COMMAND AND CONQUER: RED ALERT
£44.99 Virgin Interactive *PCF* 65 90%

WARCRAFT 2: TIDES OF DARKNESS
£44.99 Blizzard/Zablac *PCF* 53 90%

DUNGEON KEEPER

- ✓ Huge challenge
- ✓ Dazzling graphics
- ✓ Warped humour
- ✓ Playable on any level
- ✗ Goodbye, real world

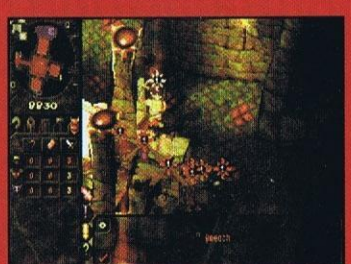
Processor	Min: 486DX2	Rec: P90	
Memory	Min: 8Mb	Rec: 16Mb	
System	✓DOS	✗ WIN 3.1	✓WIN 95
Video	✗VGA	✓SVGA	✗3D card

***PC FORMAT* Rating 94%**

4 A healthy stash of gold is just part of what you need to attract monsters to your dungeon. The other absolute must is somewhere for your monsters to sleep. So set the imps to work again on a new room and when it's finished, turn it into a lair.

5 All you need now is food for your denizens, so it's time to build a hatchery where chicks grow out of the ground, ready for eating. If your imps aren't working fast enough you can buck their ideas up with a few slaps.

6 Get ready to open your dungeon for business. If you look around you'll find a portal not close to the heart of your dungeon. Tunnel through to it and wait for the imps to claim it as yours, then the monsters will come.



7 Expand/build as necessary and you'll attract the attention of one of those adventurers. If you've built properly and kept your monsters happy, paid, fed and trained you'll have no problem in killing him, before moving on to new realms.

water.

pressure.

http://www.janes.ea.com

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NITRO RACERS

£19.99 3DO/Torc ☎ 0181 541 4082

Racing game

Souped-up cars thundering around an off-road course, undertaking days of gruelling race conditions – **David Bradley** reckons he's got this rally driving lark sussed. So, what the devil's going on here, then?

The simple gameplay of *Nitro Racers* just can't compete with its direct competition, and once you become aware of certain flaws in the game it's nigh-on impossible to get them out of your mind.

FIRST-PERSON ULTRA-REALISTIC racing sims may be in fashion at the moment, and there's also a lot of talk about 3D mission-based car combat. But what of good old-fashioned top-down racers such as *Super Sprint?* Are you one of the people who cut their teeth on speedy little jaunts such as that, and agree that there hasn't been anything suitable for the PC since *Micro Machines 2* (*PCF* 47, 78%).

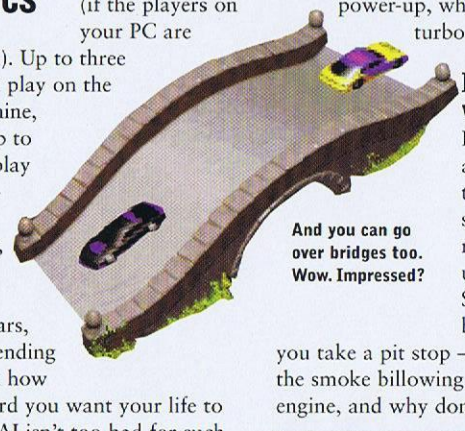
Nitro Racers is here to remedy that situation – a total nonsense bird's-eye-view motor racing title, with enough tiny car action to keep your arcade-addled brain sated. There are 30 tracks to race around, 15 of which are intended for 'management play'. This involves merely taking regular pit stops to repair the damage your car suffers as it drives around. Finishing in the top three earns you credits, with which you can hire a superior pit stop crew, or use to improve your engine and tyres.

On track

The tracks themselves are well designed, and can be viewed in one of three ways – traditional full screen view, a scrolling zoomed-in view (as with *Micro Machines*), or a split-screen view (if the players on your PC are so inclined). Up to three people can play on the same machine, whereas up to eight can play over a network. For single play, you can race up to eight PC cars, depending on how hard you want your life to be. The AI isn't too bad for such a simple title, and the cars are perfectly happy to mess you about just as much as your 'mates' would.

Gameplay is fun, and reminiscent of old arcade classics

Gameplay is fun, and reminiscent of old arcade classics. But it's not particularly mentally challenging, so there's opportunity aplenty to consider *Nitro Racer's* flaws – and once you spot them, you can't get them out of your head. For one, there's no engine noise. This is because developers Torc didn't want anything to interfere with their specially commissioned techno tracks, 15 of which supply a suitable high-energy lift to proceedings. So, the only 'vrroooom' you hear occurs when you activate a Nitro power-up, which is a groovy turbo-boost addition.



And you can go over bridges too. Wow. Impressed?

Invincible vehicles

Despite a damage metre at the top of the screen, the cars remain virtually unharmed. Sure, they wobble a bit until you take a pit stop – but where's the smoke billowing from the engine, and why don't they roll over and die? And it's virtually impossible to leave any impressive skid marks on the track, despite excessive hard braking.

3DO's release has a certain retro charm, and there's no denying its accessibility as a title for sitting round the keyboard thrashing your pals of an evening (which is what multi-player games have always been about). However, these are the 1990s, and driving round and round a little grey track is shallow and crass. Simple as that. PCF

Being able to see the whole track can bring a grand atmosphere to proceedings.

There are 30 tracks, 15 of which enable you to tune your (simplistic) management skills.

Looking elsewhere

Clunk-click on every trip. Buckle up before you take on these titles:

MICRO MACHINES 2
£44.99 Codemasters *PCF* 47 78%

INDYCAR RACING
£44.99 Papyrus/VIE *PCF* 28 88%

NITRO RACERS

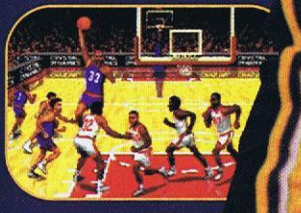
- ✓ Pleasantly simple gameplay
- ✓ Genuine retro entertainment
- ✗ 'Limited' is an understatement
- ✗ The little flaws grate
- ✗ Can't compete with latest racers

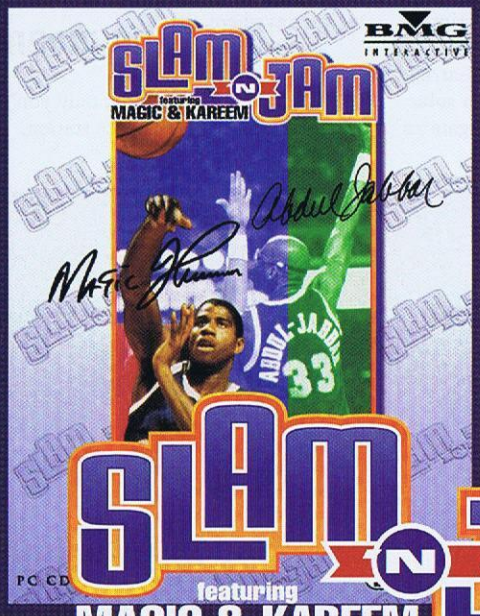
Processor	Min: P90	Rec: P133
Memory	Min: 8Mb	Rec: 16Mb
System	✓DOS ✗WIN 3.1	✓WIN 95
Video	✗VGA ✓SVGA	✗3D card

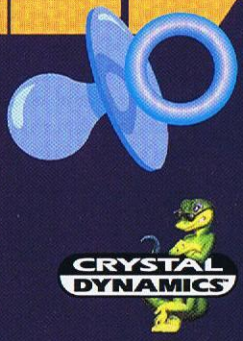
***PC FORMAT* Rating 64%**

MAGIC & KAREEM RULED WHEN SHAQ STILL SUCKED

OUT NOW ON PC







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Chat-em-up

Game characters are not usually sociable, but the ones here love talking. **Colin Mitchell** chats up the female sprites, and fails.

SENTIENT

£39.99 Psygnosis ☎ 0151 282 3000

WE LIKE CATEGORISING games. But, some titles just don't fit into a genre and *Sentient* is one such game. Bear with us then, as we fumble with the inadequacies of language, trying to explain exactly what it's all about.It is tempting to simply plaster 'chat-'em-up' onto this review, (and we can't resist temptation), but that description doesn't do it justice either.

You take the role of Garrit Sherova, a medic sent to a solar research station to investigate an outbreak of radiation sickness. Your ship crashes in the landing bay, and you're the sole survivor. You want the *bad* news? The station is on a 72-hour, one-way journey into the sun. Typical, isn't it? And so, it's up to you to save the station.

Take liberties

To achieve this heroism, you can go anywhere, use anything and talk to anyone – so it's a bit like real life, only you're stuck on a stricken space station.

Sentient is ultimately impressive, but by no means excellent

The 62 characters on the station each have a distinct personality and role: leave them alone and they continue to walk, talk and work, just like real people. So, unless you're Desmond Morris, it's a bit more exciting if you get involved.

The main interaction is via the conversation system. Whereas most titles present you with a list of questions to ask each character, *Sentient* gives no such guidance.

Press [Enter] to display the conversation window and you're offered several options – including asking a question, making a statement and giving an order. Choose one of these and a whole new selection of options appears. This process continues until a final question is reached. It's impossible to count the number of things you can say, because the conversation options increase all the time as you learn information, find new objects and meet new people.

This title is initially bewildering and this is mainly due to the quality

THE FIRST 60 MINUTES

It's just like being a baby again: you have no idea how to speak, how to pick things up or how to eat without spilling food down your front.

1 The gorgeous rendered intro sets the scene for a conspiracy-style plot. Your character, Garret, is on his way to the Icarus station. There's a huge solar flare, which makes landing the transport difficult. It crashes, rather spectacularly.

2 After waking up, you find yourself in a contaminated shuttle bay. There's no way out, but there is an injured engineer on the ground. He won't stop whining, so patch him up with your medikit. He shuts it and helps you to escape.

3 After escaping, you're shot by security (because they don't like your face). While unconscious, you're transported to a strange garden maze. Find the centre and you're treated to another attractive cut scene before waking up in the sick bay.

Communicate with the aliens and they'll send you a giant glowing frisbee. They may also save your space station from crashing into the centre of a star. But you have to play frisbee with them first.

of the character interaction combined with the size of the space station and the number of distinct characters. Unfortunately, because you only have a finite amount of time before the station plunges into the sun, you must figure it out quickly. And that's what *Sentient* is all about. So anyone using the "em-up' suffix when describing it should be spanked severely. Ouch.

Talk about conversation

So, *Sentient* is complex, realistic and saturated with AI and a revolutionary conversation system. But, is it any good? Well, yes. PC RPGs have often relied on combat and logical puzzle-solving in order to make up for the inadequacies in character interaction. But the interaction here is frighteningly sophisticated, and it's delightful when you string together a full and natural conversation with a character in an attempt to extract the information you require. It's not perfect, and if you don't ask the right questions you get non-committal answers – but no other system comes close.

All this freedom has a price. Too much dallying around or saying the wrong thing changes the entire path of the game, and closes one storyline and starts another (usually a worse one). It's all too easy to have absolutely no idea what you're supposed to be doing and thus lose interest in what's going on. Luckily, *Sentient* is sufficiently moreish to make playing it again (and getting it right) almost as exciting as the first time, and usually more productive. And you need to play the game many times before you can find your way to the most successful conclusion.

A revolutionary game, *Sentient* does have a few faults besides the complexity problem. Most notable of these is the 3D engine, which is terrible. It looks a hell of a lot worse than *Quake* and moves at less than half the speed. Although there isn't any action to necessitate a lightning-fast engine, it's so slow on anything below a P133 that your progress is noticeably hindered. And if you own a P75, forget it. On top of this, Garrit seems unable to run, forcing you to stroll leisurely around the space station in an attempt to find the person you need to speak to (for several tedious minutes at a time).

Listening in to other peoples conversations allows you to find out who fancies you.

Dammit, I'm a polygonal game character, not a doctor. Oh, and he's dead... Jim.

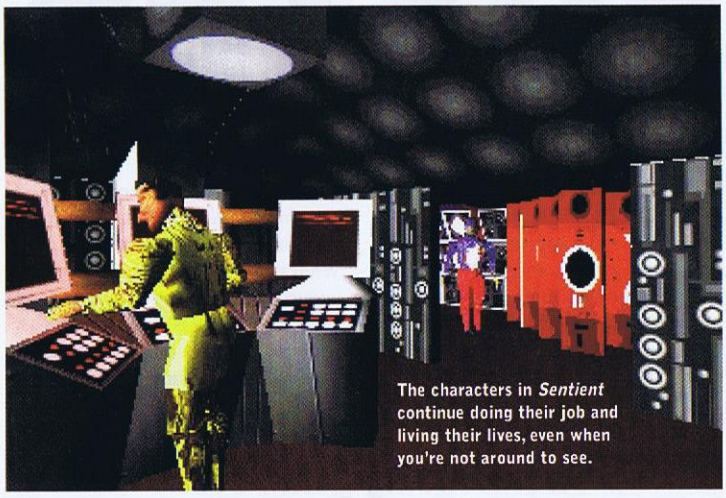
The interaction in *Sentient* is frighteningly sophisticated

Absolutely peerless

This is a title so far ahead of its time, it has no peers to compete with. The character interaction is far beyond anything else you've experienced before, plus the amount of freedom you're afforded is second to none. However, this is definitely a flawed masterpiece.

Technical whinges aside, the realistic game design creates almost as much boredom and confusion as wonder.

Sentient is ultimately impressive, but by no means excellent. As a vision of a future games, it's genuinely amazing, and well worth taking a peek at. We just hope that there will be a sequel that fixes most of the problems. Psygnosis has created a game that turns the role-playing games' market on its less-than-talkative head. PCF



The characters in *Sentient* continue doing their job and living their lives, even when you're not around to see.

Looking elsewhere

Nothing on this planet resembles *Sentient*. Play these and fantasise:

DIABLO
£44.99 Blizzard *PCF* 67 90%

DAGGERFALL
£39.99 Virgin *PCF* 63 81%

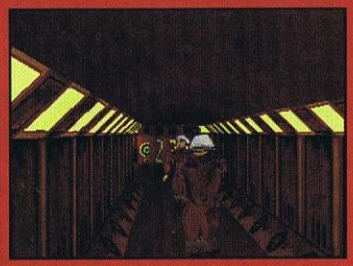
SENTIENT

- ✓ Amazing conversion system
- ✓ Huge amount of freedom
- ✓ Impressive AI
- ✗ Terrible 3D engine
- ✗ What the hell is going on?

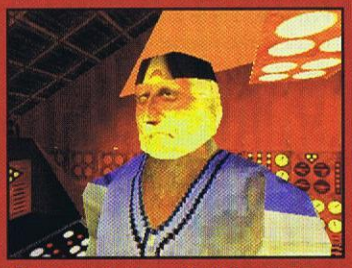
Processor	Min: P90	Rec: P133	
Memory	Min: 16Mb	Rec: 16Mb	
System	✗DOS	✗ WIN 3.1	✓WIN 95
Video	✗VGA	✓SVGA	✓3D card

***PC FORMAT* Rating 82%**

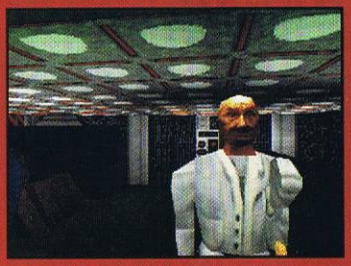
4 Your assignment comes from Dr Dania Luvey. She wants you to fetch a Report from Dr Malichek in the Medical Research Lab. You have no idea where that is, so ask her. Once she tells you, find Malichek, take the report, and listen to his advice.



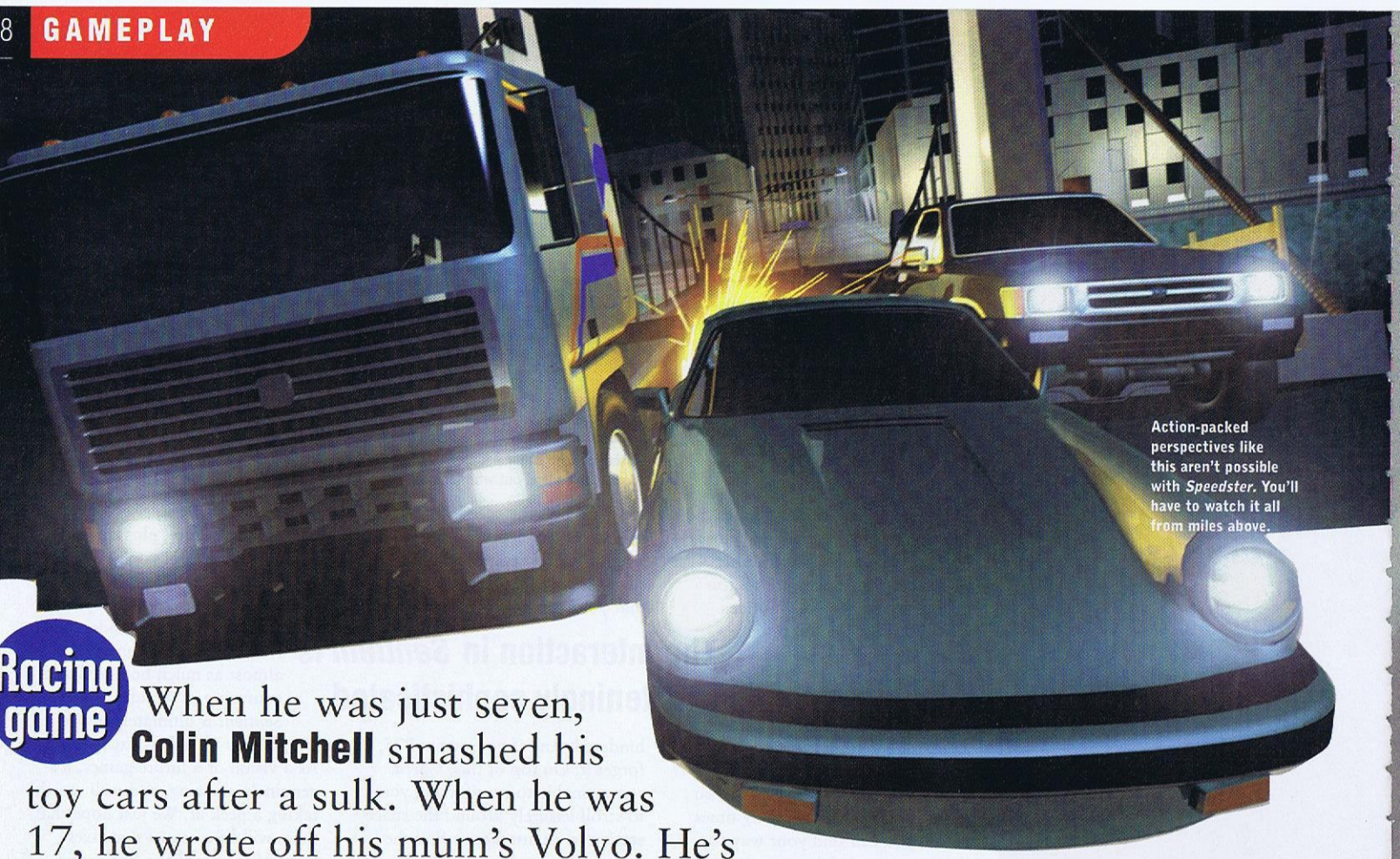
5 Having spoken to Malichek, you should be on a mission to find the Kenyon report – an engineering document. You find this in one of the technical rooms. On your way, take a look in Azirra's quarters and discover some interesting information.



6 Once you've brought all the reports back to Dr Luvey, you help her discover a code apparently being transmitted from the sun. You need to speak to someone more technically-minded. Garrilac, chief of engineers, would like to have a word.



7 Find Garrilac, tell him everything you've learned about the plots and he gives you even more information. At this point, things start to get difficult, because you have no idea what to do next. Maybe you should speak to Azirra...



Action-packed perspectives like this aren't possible with *Speedster*. You'll have to watch it all from miles above.

Racing game

When he was just seven, **Colin Mitchell** smashed his toy cars after a sulk. When he was 17, he wrote off his mum's Volvo. He's reviewing this racing game and his PC is quivering.

SPEEDSTER

£39.99 Psygnosis ☎ 0151 282 3000

EVERY BOY PLAYS WITH TOY cars. Imagine for a moment, just why this pursuit is so enjoyable. Imagine those turbo-charged cars diving off tables; screeching handbrake turns around hairpin bends; smashing into each other, and causing imaginary injuries to imaginary passengers. Imagine rolling those cars down ridiculous ramps with massive jumps at the end, looking on in wonder as they launch into the air, spinning out of control and landing in a heap of similarly fated vehicles. Now, if we can interrupt this glorious reverie for a moment, it's time to get relevant: what the hell has *Speedster* got to do with all this? Surely it's not a toy car simulator?

Brotherly shove

Well, it is. Sort of. With that bird's-eye view of those little cars tearing around tracks at enormous speed, it should be as much fun as rolling toys over your sister's head (but only more so, because this time you're at the steering wheel). Unfortunately, it isn't much fun at all. At first, racing those tiny cars is enjoyable: childhood memories are evoked; the car appears resplendent in its dinky glory, and it all occurs before your eyes due to the wonders of an impressive 3D engine.

Eventually, the rose-tinted specs begin to crack. Switch to SVGA and that groovy-looking engine slows down unfeasibly, even on a high-end Pentium. There are also disadvantages in the overhead viewpoint: there's little sensation of speed, and there are no blind corners or dipping hills. It feels flat, and it's too easy to see where you're going. What's more, all the tracks are unexciting – no jumps, no guns, and no four wheel drifts around corners. Even the different types of terrain (including snow and ice) make little difference to the racing experience. It's ridiculous that a jeep can perform a tight hairpin bend on packed snow.

Speedster isn't the worst racing game ever – it is _partially_ fun

The next annoyance involves the other racers, because their speed levels seem to be randomly controlled. For example, on lap one, you tear along the straight at maximum speed – but don't gain an inch. A lap later, the same situation occurs, and everyone appears keen to test their brakes (which makes overtaking a doddle). But despite all these own goals, *Speedster* scores a few points. The split-screen two-player mode is reasonable fun, because both of you have to deal with the inadequacies at the same time. There's a fair amount of play to be squeezed out of it, because the highest difficulty level is very tricky indeed.

Speedster isn't the worst racing game ever – it is *partially* fun. But almost every part of it is flawed. Interesting idea, shame about the implementation. PCF

Leave Spaghetti junction, get gridlocked near Birmingham, then run out of petrol.

The overhead perspective looks attractive, but the SVGA moves like a concrete slug.

Looking elsewhere

If you want to race titchy little cars around twirly circuits, drive these:

MICRO MACHINES 2
£12.99 Codemasters *PCF* 66 81%

SCREAMER 2
£44.99 VIE *PCF* 64 80%

SPEEDSTER

- ✓ Driving tiny cars is fun
- ✓ Attractive 3D engine
- ✗ No sensation of speed
- ✗ Uninspired track design
- ✗ Illogical opposition

Processor	Min: P75	Rec: P100
Memory	Min: 8Mb	Rec: 16Mb
System	✗DOS ✗ WIN 3.1	✓WIN 95
Video	✓VGA ✓SVGA	✗ 3D card

***PC FORMAT* Rating 58%**

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2 PLAYER SPLIT SCREEN ACTION

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WINDOWS 95 SUPPORT

MMX SUPPORT

3DFX SUPPORT

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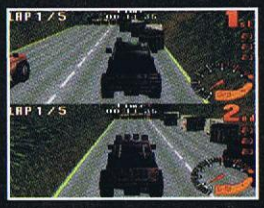
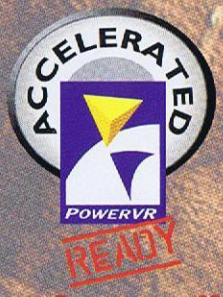
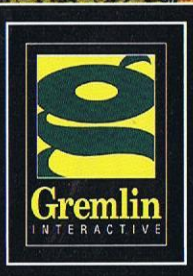


DRIVE YOUR MACHINE TO THE LIMIT

"great graphics, great gameplay...pushes technology to its limits."-3DFX Inc.





Also available on Sega Saturn and PlayStation.

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That's no moon – it's a space station! Succeed at being a bounty hunter and you're taken to a base which makes *Babylon 5* look like a vase.

QAD

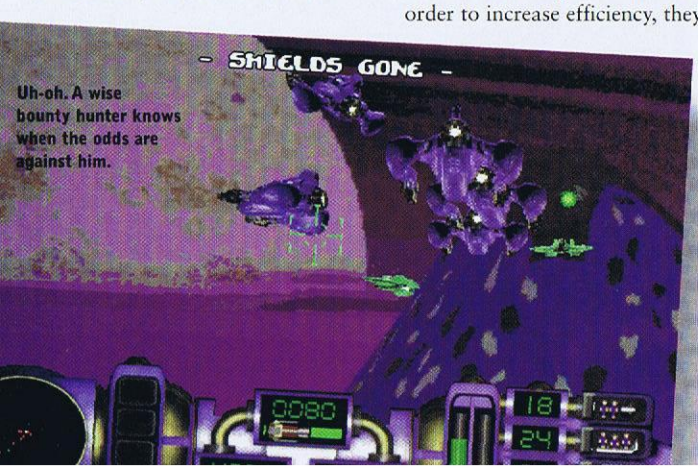
£29.99 Philips/Cranberry Source ☎ 0181 343 9373

Space combat

The wide blue yonder, a place of peace? Or the opportunity to fly around hillsides killing people? Friendly psychopath **David Bradley** packs his Gamma Cannon, and heads for the countryside.

DO YOU THINK THAT RESCUING hostages from a siege on a dangerous planet can be fun? *Quintessential Art of Destruction* turns this premise into a two-player tournament, which owes more to chess or Othello than to any arcade game.

The warlike Thrugs have attacked a solar system, and the Galactic Government has authorised you, as a bounty hunter, to sneak out the hapless residents. In order to increase efficiency, they've provided some competition by enabling rival hunters to join the fray. As with real life, the profit motive doesn't lead to a better service – in fact, certain bounty hunters resort to sneakily killing hostages, so that they have a higher percentage of live escapees than their rivals.



Uh-oh. A wise bounty hunter knows when the odds are against him.

With such engaging gameplay it's a shame that it looks so shabby

The taste of paradise

The story unfolds over a series of rolling alien landscapes which owe much to *Magic Carpet*. Two bounty hunters (you plus a friend, or the PC AI) zoom around the surface, picking up escape pods from one location and dropping them near a group of residents. Waiting until they get on board, you pick the pod up and drop the folk off at your base. The ship has armaments which enable you to zap the other player (as well as any Thrugs).

But this isn't a shoot-'em-up, because the gung-ho elements are mere embellishments. *QAD* is a tactical game, in which placing your pods strategically becomes distinctly challenging. It's possible to drop your pod outside your opponent's base so that the stupid hostages will, Lemming-like, abandon him for you. Killing people to [illegible] percentage is often the wisest way to win; while picking up your oppo's pod to claim his saved hostages as your own is difficult.

With such engaging gameplay, it's a shame that it looks so shabby. The ships look blocky and while the hostages are featureless and ill-proportioned. Moreover, if you fly at the big bases from a certain angle, you go through them. You may insist that these things be overlooked, because it's such a neat game idea, but in today's PC environment, it's impossible to get away with yesterday's presentation. PCF

Looking elsewhere

Our favourite outdoor pursuit is going to the local shops and purchasing:

SANDWARRIORS
£24.99 Gremlin *PCF* 70 84%

SCORCHED PLANET
£39.99 Virgin *PCF* 63 79%

QAD

✓ An original concept
✓ Encourages tactical play
✓ Unfailingly frenetic
✗ Poor, limp graphics
✗ Uninspiring presentation

Processor	Min: 486/66	Rec: P60	
Memory	Min: 12Mb	Rec: 16Mb	
System	✓DOS	✗WIN 3.1	✓WIN 95
Video	✗VGA	✓SVGA	✗ 3D card

***PC FORMAT* Rating 74%**

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FIFA Soccer Manager - Worth the pain for a glimpse of the glory.

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Wow! Look at that thing explode! Of course, being a sick cybernetic freak returning from outer space to enslave the Earth it deserves no better.

TERRACIDE

£44.99 EIDOS ☎ 0121 606 1800

Space combat sim

It's that well-known only-you-can-save-the-Earth story again. If Skywalker-lookalike **David Bradley** had a pound for every time marauding invaders tried to conquer our beloved planet, he could probably afford a better haircut.

THERE'S ONE THING WORSE than marauding aliens and that's marauding humans. Those blighters stop at nothing in their quest to dominate the galaxy. So, it's ironic that in *Terracide*, it's actually wayward earthlings who threaten to bring 'civilisation' to its knees. Centuries ago, the first colonies were established on far-flung inhospitable planets, and the inhabitants were forced to adapt by relying on their advanced technological and biological engineering to survive. And now, they've chosen to return home, and claim it as their own.

Our military commanders decide that a lone pilot would be more successful at penetrating the

THE FIRST 60 MINUTES

Buckle up, and buckle down to some good old-fashioned carnage. Here's how to get started against those mutant cyborg humanoid beasties...

1 Straight into the action – as soon as your ship is injected into the invaders' scout ship, you encounter robot ships just waiting to take off. Blowing them up before they're scrambled is satisfying, but not a challenge.

2 The corridors are disconcertingly dark. What do they hide? It's good to get into the habit of launching flares, which bounce around, providing light. They drain power though, so always keep an eye on the power bar to the left of the screen.

3 Your first real opponent. The chrome robot hovers above the ground shooting heavy light at you. He manoeuvres incredibly fast too, so keep that fire button pressed, and spin around in order to keep up with him.

Another perspective

Oh, Dave. Oh, oh, Dave. No, I'm not hysterical, I'm just surprised by how easily you've been won over by a pretty face. There's no doubt that lovely graphics make any game more enjoyable, but they can't make up for a game that's rotten to the core. Quite simply, that golden oldie *Descent 2* is half as pretty, twice as fast, three times as challenging, and four hundred times more enjoyable than this sham. Roughly speaking.

Colin Mitchell

invading fleet's outer defences. It falls to you, as the foolhardy pilot, to destroy the returning colonists from inside their own ships.

Uniquely ordinary

It's not a particularly unique story, but then it's not a particularly unique game. Dropped into the cockpit of a nifty little fighter craft, you're catapulted into the 3D corridors and passages of the first ship in the fleet. If your first impression is: "This is *Descent*, isn't it?", wait until you see this baby move – it's a *Descent* clone with knobs on.

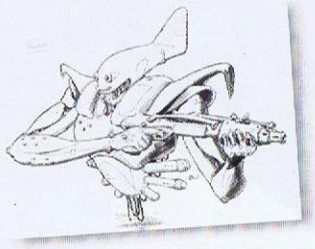
Clearly optimised for MMX machines and 3D accelerator cards, there's a screen option for every form of resolution capability. A non-MMX, bog-standard Windows display driver is able to fight the colonists in glorious low-res – but if you have a Jedi Master PC, with every single multimedia add-on in the known multiverse, you have a real ball.

Silk lightning action

Accompanied by a graphics card, even a P90 plays at lightning speed, and runs as smoothly as silk. Consequently, flying around the starships is incredible: the cockpit view rolls and pitches as you slam into the passage walls; coloured lights cast twinkling reflections on chrome surfaces, and you see the rest of the invasion fleet through thick glass viewing ports.

It's not a particularly unique story, but then it's not a particularly unique game

The robotic defences are undiluted *Descent*. They're nasty little things with polygonal limbs that drop off when they explode, but conversely manage to be utterly scare-free. However, they move quickly and tactically, so blasting them is a challenge. You can salvage them for weapons, of which there are lots. Plasma blasts are fully light-sourced as they whizz away towards their target, casting a powerful white glow. You can have up to three weapons at any time plus a flare gun to light your way through darkened sections.



This is the concept art for the mechanical boss – surely some legs wouldn't go amiss?

Inferior design

After the wow-factor has worked its magic, there's a disturbing feeling of disappointment. The level design is adequate, but feels somehow flat despite all the shafts leading up and down from the main chambers. There are some imaginative components to encounter on the ship, such as gravity wells that suck you in unless you shoot out the controls, and fans which buffet you with hot air. Your missions are constantly varied: to progress you follow the on-screen messages, which direct you to either destroy the ship's central computers, knock out a ventilator shaft or clear out strategically important defence craft.

The weapons' appeal increases when you discover the updated repeating versions, which pump out projectiles as fast as you hit that Fire key. Some of these are really beautiful, such as the homing missile which you follow in an infra-red warhead-mounted camera.

Suspense-free zone

What's lacking here is that vital sense of tension created by other first-person titles. Within *Descent*, you have to race the clock – and if you've played it (and who hasn't?) then you know the terror that's induced when you realise you're lost in the labyrinthine mineshafts. *Terracide* is quite simply not as exciting as that. It's sophisticated, and pleases the part of your brain that appreciates the clever footwork of an Italian Serie A team. However, the considerably larger part of you, which thrills at the sight of your home team booting it up the field, is disappointed.

Buy *Terracide* to show off to your friends and justify that graphics card purchase, but dust off *Descent 2* to see you through the summer nights. PCF

The view of deep space is compelling, but don't take your eyes off that little flying robot. It's hovering there menacingly by the windows, but your laser pulse cannon can see it off.

Looking elsewhere

Genre provides a psychologically pleasing way to categorise our lives.

DESCENT
£9.99 Acclaim Black Market *PCF* 42 92%

DESCENT 2
£44.99 Interplay *PCF* 57 88%

TERRACIDE

- ✓ Smashing visuals
- ✓ Smooth, fast gameplay
- ✗ No tangible atmosphere
- ✗ Uninspiring level design
- ✗ It fails to rival *Descent*

Processor	Min: P90	Rec: P133
Memory	Min: 16Mb	Rec: 32Mb
System	✗DOS ✗WIN 3.1	✓WIN 95
Video	✓VGA ✓SVGA	✓3D card

***PC FORMAT* Rating 76%**

4 You won't be happy if your little craft suffers fatal damage, because you have to start over. So, keep things patched up by salvaging metal scrap from dead robots. A little flashing indicator helps you locate spares. Fly into them for an instant re-fit.

5 Proceed into the scout ship and you enter the gravity drive system. Blow it out quickly, or you're sucked down to one end. You need to utilise all the flying skills you acquired earlier, in order to handle the craft in such strange gravity conditions.

6 The scout ship is dealt with, so it's off to the repair ship. At times you need to fly between the vessels and the action becomes a full-on space shoot-'em-up. Fly around the vessel, and lock onto the defence ships with your plasma cannons.

7 Each ship has its own 'personality', and each get progressively harder. By the time you reach the bigger ships (such as this mining vessel), your ability to target the automatic guards at speed will have dramatically improved.

3D Shoot-'em-up

Sure that no alien could stand up to good old grandpa Walton, **David Bradley** goes in search of apple pie and bootleg whiskey.

REDNECK RAMPAGE

£39.99 Interplay ☎ 01628 423666

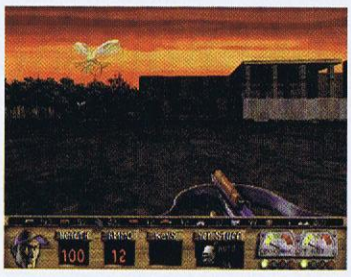
True to the hillbilly theme, squawking chickens fly out of every doorway.

LIFE AS A HILLBILLY HOG farmer ain't easy. Sure, there's the community 'spirit', and moonshine. But sinister things are afoot in the hills of Arkansas, in the form of another *Mars Attacks!*-style invasion. It's your job to clean up.

Leonard and Bubba are two guys who are convinced that their beloved pig has been kidnapped. They head into Hickston town in hot pursuit, only to find the place crawling with aliens and their brain-dead human puppets. You are Leonard – and you must defeat the invaders, meet Bubba (hit him with a crowbar to complete the level), and find the prize porker before your existence comes to a end.

Class of *Duke* 'em high

The visuals are handled by the pre-*Quake* Build engine as deutted in *Duke Nukem 3D*. There's all the usual first-person run-jump-kill action... so gameplay is almost the same as that in *Duke, Outlaws* or *Blood*. So, just what is this title's unique selling point?



Put on your *Cotton Eye Joe* CD hunt out that red-checked shirt and 'kerchief.

Actually, *Redneck* stands out because of its imaginative weapons, humour, and sense of place. The theme is all-encompassing; from the chickens that flap out of doorways, to enduring and endearing characters such as Sheriff Hobbes. For health boosts, take a swig of beer or whiskey, but beware – too much and you start to stagger around the paths like a drunk.

Shotgun fun

Ultimately, it's the weapons which take the nibbled biscuit. There's the obligatory revolver and sawn-off shotgun, but *Redneck* hands you a hardcore crossbow that fires dynamite. There's a bowling ball, a keg of gunpowder (pop it near your target then shoot it), and a machine gun that has an infuriating, hilarious recoil – you must be careful where you're standing as you open fire. The alien bosses have plasma-shooting power arms, so when you kill one you can rip off the limb and walk around with it perched on your shoulder. And buzz-saw blades are as mean as razor-sharp frisbees.

Of course, there are a heck of a lot of in-breds in this game. Country life and all.

When it comes to the crunch, *Redneck Rampage* is not as exciting as *Duke Nukem 3D*. However, it's fast and smooth(ish), and has block rockin' attitude to spare. The networked game enables some creative ways to dispatch your friends, but it's not a serious rival to the almighty *Quake*. PCF

Looking elsewhere

Petition your MP if you have a point to make about gun control. Or play:

DUKE NUKEM 3D
£9.99 Kixx *PCF* 71 **82%**

OUTLAWS
£40 LucasArts *PCF* 70 **59%**

REDNECK RAMPAGE

- ✓ Inventive new weapons
- ✓ Weird sense of humour
- ✓ Authentic hillbilly theme
- ✗ Rustic spelling irritates
- ✗ Inferior to *Duke* or *Quake*

Processor	Min: P90	Rec: P133
Memory	Min: 16Mb	Rec: 32Mb
System	✓DOS ✗WIN 3.1	✗WIN 95
Video	✗VGA ✓SVGA	✗3D card

***PC FORMAT* Rating 70%**

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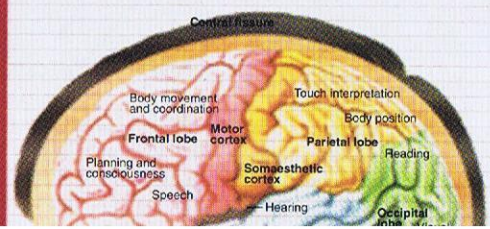
The World Book Multimedia Encyclopedia CD-ROM International English Edition from IBM does a lot of work for your kids. It's a bit of a swot really – because it uses the Internet to update the thousands and thousands of articles it contains with any juicy nuggets of information.

This means that World Book is one encyclopedia that can always stay up to date. After all, things do change. There was a time when everyone was convinced that the world was flat and that if you sailed too close to the edge you'd fall off.



Of course you can also rely on World Book to give your child updates on more recent discoveries and events, such as the Hale-Bopp Comet and this year's general election.

However, cribbing from the World Wide Web isn't the only way World Book adapts for your children.

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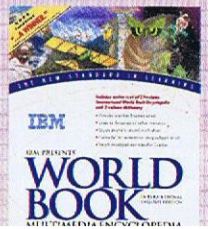


IBM

CARMAGEDDON

£34.99 SCI ☎ 0171 585 3308

Racing game

Mirror, signal, manoeuvre, stay out of the bus lane. **David Bradley** knows all the rules, but missed the Highway Code bit about multiple-kill bonuses.

Huntin' shootin' and fishin'. Every gentleman's car should be armed to the the teeth with killing gear.

THERE ARE FOLK WHO ENJOY basic racing games, but some of us want to throw handbrake turns and charge our opponents head-on. We want to crash through the barriers and terrorise spectators. We want to see if we can hit the kerb hard enough to bounce onto the police van on the corner. We want *Carmageddon*.

SCI's latest car sim takes *RAC Rally Championship*, crosses it with *Quake*, and creates a first-person murder race. With a 3D engine based on a tweaked B-Render set-up and realistic car physics, this title supplies 36 levels, where racing is just one of your options and freedom of movement is permitted throughout the level. From the cliff path, you drive down to the pier and see the bikini-clad tourists on their yachts; whereas in city races you peer at your opponents from the rooftops.

Yuck, what a mess. It'll take more than a quick flick of the windscreen wipers to deal with that pensioner's guts.

Pedestrian tossing

A torrent of publicity has rained on *Carmageddon's* bloodthirsty content – you do get extra points for killing pedestrians. The moral minority is, predictably, shocked; but most balanced individuals appreciate how over-the-top it is. 'Tongue-in-cheek' doesn't even begin to describe the way in which grannies with walking frames, cows, macho men in shorts, and scientists in white coats all squelch beneath your front wheels. When you realise that the power-ups include Turbo Pedestrians, Pinball Mode and Jelly Suspension, you know that *Carmageddon* is only likely to influence the way you drive if you live in Toon Town.

A torrent of publicity has rained on *Carmageddon's* bloodthirsty content

With this in mind, the level designs are brilliant. Drive off the track on one snow-covered level, and you find a church nestled among the fir trees and log cabins, complete with parishioners milling about outside in their wellies. Can you resist temptation?

THE FIRST 60 MINUTES

Put the key in the ignition, press the pedal to the metal, and mercilessly crush anyone who so much as suggests that you should wear a seatbelt.

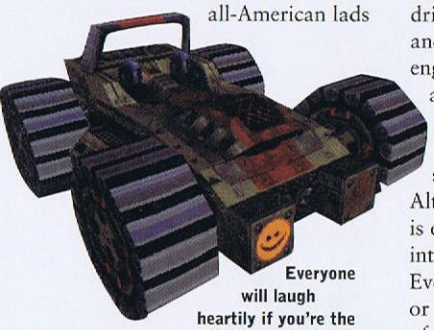
1 The starting line on Maim Street, USA: the chequered flag drops and everybody's off. Watch that wimp referee bloke run! He'll soon be spilling his guts on the tarmac, surely? The gloomy urban streets beckon, and the air's filled with screams.

2 Even if you're a total beginner, you can see off your weaker opponents almost immediately – especially if they conveniently run into a lamppost. Swerve onto the pavement and finish them off, so you can get on with the race.

3 The first checkpoint's coming up, and those other drivers are in all sorts of trouble. Slavishly following the course will win you the race, but it's already become far more entertaining to watch your opponents knock themselves into a frenzy.

Like a bridge over troubled waters. It's good to get away from the crowd and take a spin along the waterfront. Don't fall in.

Similarly, there's a secret college sports ground to be discovered on the outskirts of the suburbs, with a forest of healthy all-American lads playing grid-iron, just waiting to be mown down.



Everyone will laugh heartily if you're the sucker who has to drive this little buggy.

You need to hit-and-run in order to receive credits and time bonuses, because the alternative to clearing all the race checkpoints in the allotted time is wasting all eight other cars. This results in damage which costs money to repair. If you get irreparably stuck on your back, wheels turning impotently in the air – you need to spend some money on recovery.

Unarmed and dangerous

Carmageddon features no weapons whatsoever, so you must destroy the other cars with your driving. Head on collisions, shunts off bridges and swerves that leave the other vehicle heading straight for a wall are victorious techniques. A

It's chaos down there! This is what happens when four cars and a bulldozer all aim for the same parking space.

Cunning Stunt Bonus exists to reward daring jumps and spins. Your car receives damage in real time, and you often find yourself driving round with crushed wings and smoke billowing from the engine. Fortunately, this is an arcade game, so you won't need a pit stop; if you have credits available, a single keypress supplies instant repair.

Although the single-player game is enjoyable, this title truly comes into its own in deathmatch mode. Everyone can race the same cars, or choose from the 28 other styles of vehicle – including a bulldozer, a Range Rover with an enormous spike on the front, and a hearse.

Follow your opponents' progress on the full-colour map; race in their direction (dispatching a couple of shoppers on the way), and laugh as you notice they're completely immobile with their front tyres stuck on a fence. Take aim, reverse for a good run-up... and then curse as someone drops off a bridge on top of you, crushing your engine. There are underwater sections, and winding acid sewer levels to race and fight through as well.

Although the single-player game is enjoyable, *Carmageddon* truly comes into its own in deathmatch mode

Licence to kill

Every review has its 'but', and in this case, single-player mode provides it. It's frustratingly easy to run out of time and you forever have to break off your pursuit of the enemy in order to kill pedestrians for bonuses. So, what should be an entertaining addition becomes a chore. The levels look smart, and full freedom of exploration is enticing – but at the end of the day you're in it for pole position, so you end up racing as fast as you can. And for sheer sensation of speed, this is nowhere near as fast as *Screamer 2*.

Carmageddon is an intense experience. Exploring the levels is a constant crowd-puller, and throwing yourself at other cars is the ultimate game of dodgems. However, after a few hours your enthusiasm wanes a little, only sparking again for multiplayer confrontations. All in all, *Carmageddon* offers an antidote to straightforward racers: it combines the best arcade style elements with wicked humour, and plenty of freedom and control. It also looks fantastic, moves right, and provides a standard of interaction at street level you've never experienced before. Unless you're reading this from behind bars on a charge of dangerous driving. PCF

They can run, but they can't hide. Time for a handbrake turn?

Looking elsewhere

Come one, come all: road-hogs and ram-raiders of the universe unite.

INTERSTATE '76
£39.99 Activision *PCF* 70 77%

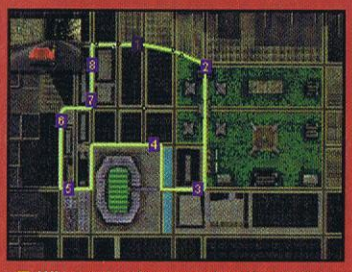
DESTRUCTION DERBY
£12.99 Psygnosis *PCF* 65 79%

CARMAGEDDON

- ✓ Total freedom to explore
- ✓ Wide variety of cars
- ✓ Stunts, crashes, and humour
- ✗ Single-player is repetitive
- ✗ Too easy to run out of time

Processor	Min: P90	Rec: P133	
Memory	Min: 16Mb	Rec: 32Mb	
System	✓DOS	✗ WIN 3.1	✓WIN 95
Video	✓VGA	✓SVGA	✓3D card

***PC FORMAT* Rating 86%**



4 When going for a wander, it's a good idea to keep an eye on the map. The yellow arrows are the other cars, and the race track is marked out in green – but look how much of the city there is! Is that a football stadium to the south?

5 Ignoring the race means you're running low on time, so start 'dealing' with pedestrians for a much needed bonus. Falling off this bridge turned out to be a good move because there are loads of the little blighters underneath.

6 Not only are you out of time, but at the last moment that pesky black car rams you off an over-pass. It's not looking good. You're both going to be scrap metal, and the only honourable thing you can do is restart on another track.

7 There are 36 maps to race around – from the city, to the icy fields of the North – and some are harder than others. Your rating as a driver improves from 99th place to first, providing the AI drivers don't keep getting the better of you.

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BRITISH OPEN CHAMPIONSHIP GOLF

£TBC Looking Glass ☎ 001 617 441 6333

Sports sim

"I'm Tiger Woods" muttered **Colin Mitchell**, after thrashing a field of seasoned golf pros by seven strokes. He is, obviously, a compulsive liar. And an uncommonly handsome man.

SUDDENLY, IT SEEMS THAT GOLF is sexy. Until recently it was the domain of old, rich types with comfy shoes and flat caps, but Tiger Woods' success has made golf the new rock-'n'-roll. At least, rock-'n'-roll at low volume, plus cardies. It's in this golf-friendly climate that Looking Glass Technologies make its first foray into the world of golf sims, currently dominated by *Links LS*.

Fortunately, first impressions of *British Open Championship Golf* suggest that it's going to beat *Links* over the head with a three-iron. The 3D engine, while noticeably less lush than *Links*', recreates the atmosphere of the two supplied courses perfectly. This title includes the venerable St Andrews, plus the venue of last year's Open, Royal Troon. Both are in Scotland, so the ambiance created is one of mist and rain, with skeletal trees, dour little houses and miserable spectators. The spartan style suspends your disbelief more than most sims, with their overly-gorgeous flora, manicured greens and azure skies.

Subtle differences in shot control are what makes a good game great

Use the powerbar, Luke

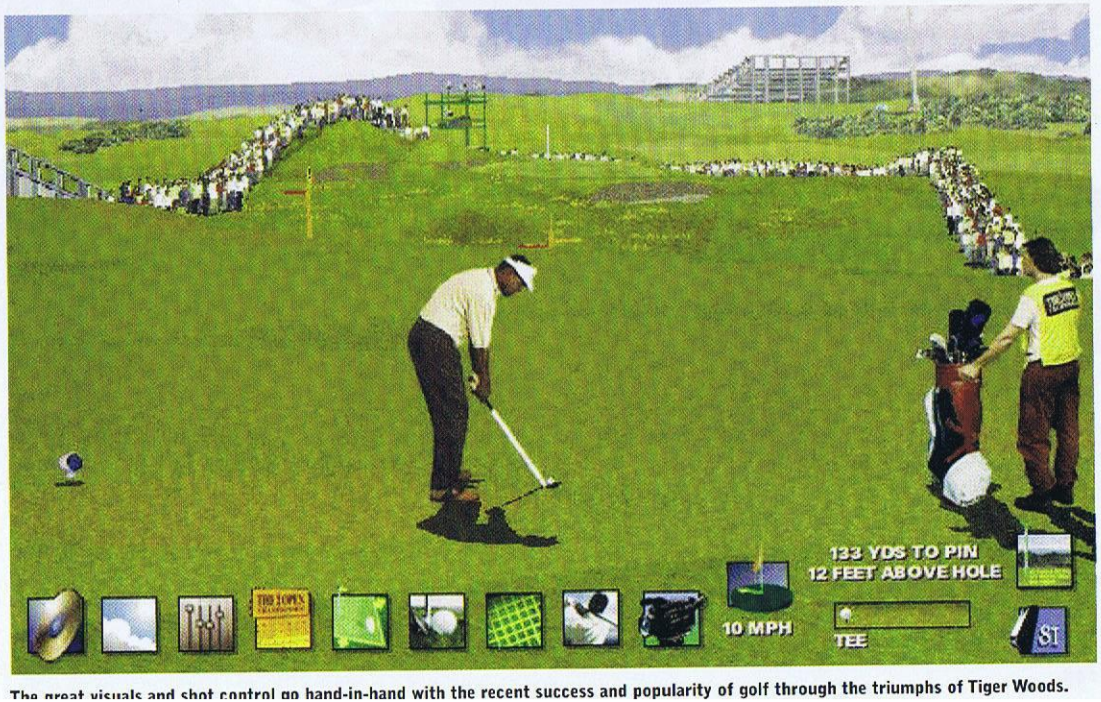
Although most golf titles are sold on the basis of their visuals, the subtle differences in shot control are what make a good game great. Despite the popularity of the new mouse-swinging control method, this title sticks with the age-old curved powerbar system. If you don't know, this involves clicking the mouse button to start the bar moving; clicking a second time when it reaches the desired power, and again to set the aim. There's no reason why, but the implementation of the powerbar works perfectly here. It's only a matter of timing clicks, but it's fun and challenging. The one real problem when playing a hole occurs when you're on the green. They all look extremely flat, and it's only the commentary (from a bloke who sounds suspiciously like Obi Wan Kenobi) that alerts you to any break. Ignore it, and you wonder why the laws of physics are affecting your ball quite so unpredictably.

Take on human opponents in an informal round, or enter the Open Championship.

Up close and personal

As the name suggests, *British Open Championship Golf* recreates the British Open Championship (one of the four Majors). There are two main ways to play – either take on a group of professionals in an informal round, or play in the full Open Championship. Although playing the championship is the main part of the game, the informal group matches are more personal, inciting grudges and a sense of competition. It's a shame you can't play against Tiger Woods, or any other golfing legend (Vijay Singh is as famous as the limited selection gets).

This is a highly competent sim, but it lacks excitement. Golf may be sexy, but despite the graphics and almost faultless shot control, it fails to arouse fiery passion. PCF



The great visuals and shot control go hand-in-hand with the recent success and popularity of golf through the triumphs of Tiger Woods.

Looking elsewhere

What could be better than spending your day trying to fill a few holes?

PGA TOUR GOLF '96
£44.99 EA Sports *PCF* 51 86%

LINKS LS
£44.99 EIDOS/Access Soft *PCF* 61 90%

CHAMPIONSHIP GOLF

- ✓ It looks like Scotland
- ✓ Two excellent play modes
- ✓ Well chosen difficulty setting
- ✗ There are only two courses
- ✗ Pancake-esque greens

Processor	Min: P60	Rec: P90
Memory	Min: 12Mb	Rec: 16Mb
System	✗DOS ✗WIN 3.1	✓WIN 95
Video	✗VGA ✓SVGA	✗3D card

***PC FORMAT* Rating 83%**

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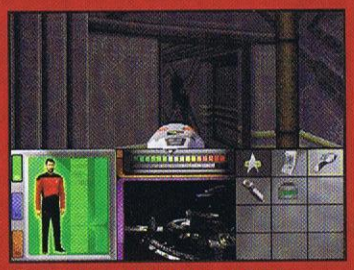
If you're a total adventure game devotee, then it's worth noting that there's a fair bit of shooting in this title

Captain Kirk, alias William Shatner, pictured here experiencing the kind of cranial vibrations that prompted him to record the mind-expandingly painful *The Transformed Man*.

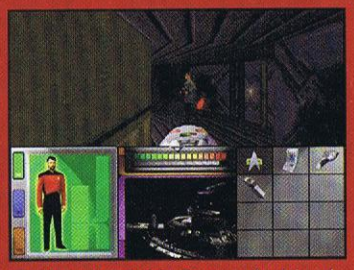
THE FIRST 60 MINUTES

The first couple of missions ease you into the game. Later on, with Klingons, Romulans and Dr Soran gunning for you, things get a little bit trickier.

1 Following a directive from Starfleet, you're sent away to the Amargosa space station, in order to investigate an attack. Short range scans reveal a few weak life signs, and an away party is then prepared to investigate further.



2 Riker's onboard the space station, phaser at the ready. The station shows lots of signs of phaser fire, and the on-board computer reports that structural integrity is way down and falling all the time. This all sounds rather worrying.



3 You've located Dr Soran and retrieved a gravitation inverter, but as you scout around, you encounter a Romulan. Best not to take any chances, so the phaser's set to a middle setting – knock him down, but don't kill him. He may yet come in handy.

STAR TREK: GENERATIONS

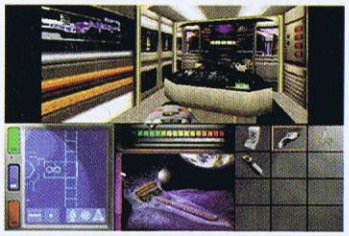
£39.99 MicroProse ☎ 01454 893893

Action adventure

Picard and Kirk saddle up to save the universe from a nutty professor, while **Adam Waring** wonders if there should be an official retirement age for Starfleet officers...

MICROPROSE'S PREMIER attempt at a *Star Trek* adventure title didn't wildly impress the hard-bitten reviewers here at *PC Format*. However, it did score big-time with the legions of devoted Trekkies out there, who'd probably rush out and purchase a *Star Trek* banana if it came in a red and black Lycra jumpsuit. And while we can forgive *Final Unity* for its lame bit-mapped graphics, we're harder pushed to pardon the other *Star Trek* games. Such FMV monstrosities as *DS:9* and *Borg* appear to have been programmed over the course of a weekend by a team of monkeys.

And now, two years later, here's the long-awaited sequel to *Unity*. *Star Trek: Generations* is the game of the film, in which the senile and incontinent original crew hand over the bridge of the Enterprise to the *Next Generation* team. Well, it's not as if they could have carried on for much longer, anyway. If Shatner and co had been wheeled-out for another movie, it'd have to be called something such as *Star Trek: My Sciatica's Playing Up; Star Trek: The Seventh Trip to the Toilet This Morning*, or *Star Trek: When's Barrymore On, Dear?*

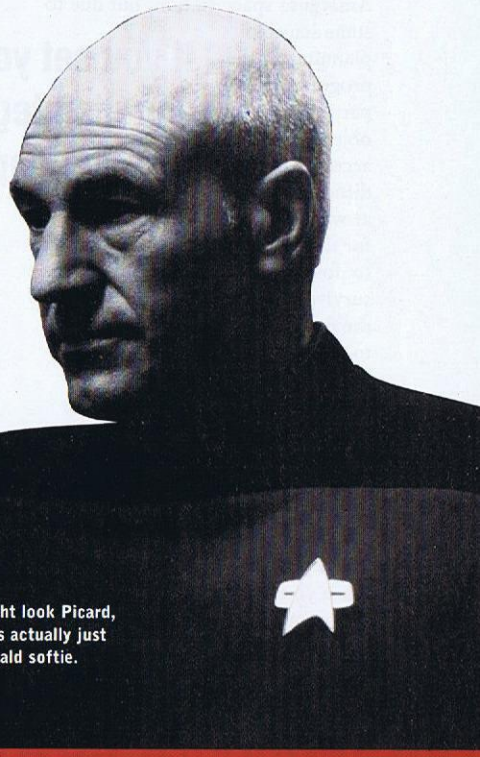


There are plenty of exciting gadgets and gizmos with which to defend the galaxy.

The *Next Generation* crew are a breath of fresh air up on the big screen, which is reflected in the nature of this title. It combines superb FMV sequences with a detailed, carefully-plotted storyline; intricate but decipherable puzzles, and a 3D texture-mapped game world. MicroProse clearly decided to start completely from scratch with this title, and having played it, we applaud the decision.

Stellar cartography

The introductory sequence to *Generations* is lifted straight from the film, and serves as a cool scene-setting device. After being informed that Captain Kirk disappeared 76 years ago, and that a nasty phenomenon ➡



He might look Picard, but he's actually just a big, bald softie.

4 And here's the first of the injured crew – and after reporting his position to the Enterprise, he's beamed to safety. There's now time to investigate the station further. Those lockers look like a good place to start, so get nosing about there.

5 Having rescued the remainder of the crew, you're beamed back to the Enterprise, only to discover that Soran's launched a missile directly at the system's sun. The star implodes and wipes out the entire solar system. Bad news, we'd say.

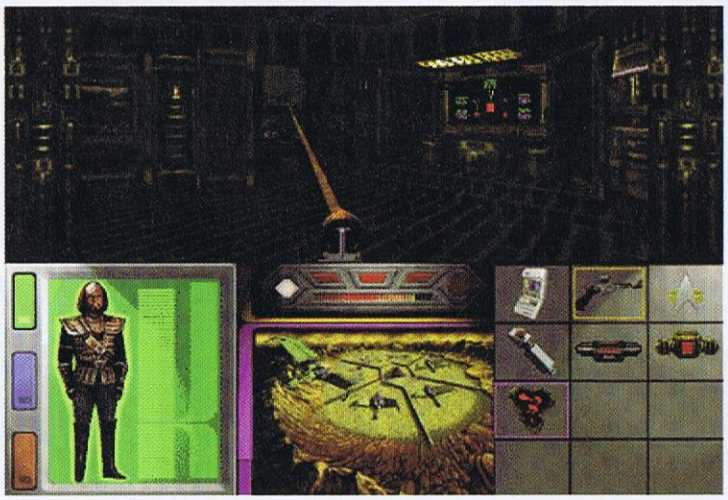
6 Soran's still out there, and the stellar cartography room reveals that Soran's destroying whole solar systems, in order to divert the direction of the Nexus. That means you've got to figure out where he's going to strike next, so get thinking.

7 Soran's done a runner to the Arvarda planetary system. Long range scans place him on the third planet, where you've also detected signs of Trilithium. Data is therefore sent down to destroy the mining facilities, and foil Soran's dastardly plans.

➡ called the Nexus is wandering the galaxy – you're dispatched to the Amargosa Science Station, which is under attack from strange forces. It's at this exact point that the FMV footage switches almost seamlessly into rendered graphics mode, and you join Picard and Data in the stellar cartography room.

It's this sci-fi observatory that's the link between the different sub-missions which make up the full game. By clicking different planets, and performing long and short-range scans, it's possible to work out everything from the presence of specific chemicals on a planet's surface, to the location of the evil Dr Soran. When you track down what you're looking for, you can set a course, and the Enterprise heads there at warp speed. Once you reach your destination, you can beam an away team down to the respective world to investigate.

The first mission is set on the Amargosa space station, but due to some sensible planning on the programmer's part, your exact objectives vary according to the difficulty setting at which you play the game. Opt for the easy level, and all you have to do is beam Dr Soran and some survivors to the Enterprise. Choose the medium setting, and you have to track down various components and solve a couple of fairly easy dilemmas. But go for the trickiest level, and you have a whole array of puzzles to solve, all within a time limit imposed by the fact that the space station's close to blowing up.



Imagine hurtling into deep space, virtually unaware of where you're heading, when you'll see your loved ones again, or when you'll return to school or work. Absolutely marvellous stuff!

Ready *Trek*

Once you beam onto the station, you immediately realise the biggest difference between *Final Unity* and *Generations*. Fundamentally, the old sprite and background style of graphic adventure has been ditched in favour of a texture-mapped 3D environment, that's reminiscent of *Doom's*. To this end, the top half of the screen reveals the game world to you, while the bottom half shows your inventory and data screens.

Remember that it's not always wise to kill your enemy. Even if it is more pleasurable.

The graphics engine MicroProse has chosen to use for away missions isn't a patch on the ones you find in *Quake, Daggerfall,* or *Doom 2*, but we argue that it doesn't matter. *Generations* is, first and foremost, an adventure game – so the quality of these graphics isn't nearly as important as the actual puzzles that are incorporated into them.

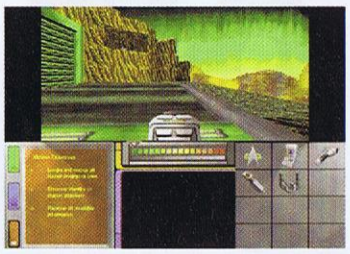
If you set your phaser to maximum power, you disintegrate the enemy, and thereby lose the opportunity to search them

The 3D texture-mapped worlds that MicroProse has created are detailed and colourful. Because most of the away team missions take place in different locations, there's a lot of variety, too. The Amargosa Space Station, for instance, is similar to the first few levels of *Dark Forces*. Later on, however, in missions such as Arvarda 2, the planets are inventive and ornate.

The away team missions that make up the bulk of this title meld the film's plot with the game's in a particularly slick fashion. You find that movement is best carried-out by using the cursor keys, but with one hand on the mouse in order to control the direction of the phaser. The fact that one hand is devoted entirely to firing means that you can react quickly to any threats. This is extremely useful when you're faced with unexpected alien interference, or outright assault.

If you're a total adventure game devotee, then it's worth noting that there's a fair bit of shooting in this title, too. However, instead of just wading in and killing Romulans, you sensibly have to consider just how big a threat you're actually facing. If you set your phaser to maximum power, you disintegrate the enemy, and thereby lose the opportunity to search them – stun them, however, and they may wake and attack you.

The puzzles featured within are logical and meticulously designed. For instance, on the very first away team mission on the Armagosa, you miss some valuable information if you fry the Romulan invaders – because one of them is carrying a Tricorder which has been scanning for Trilithium. Without key pieces of information such as this, you can't successfully progress through the game.

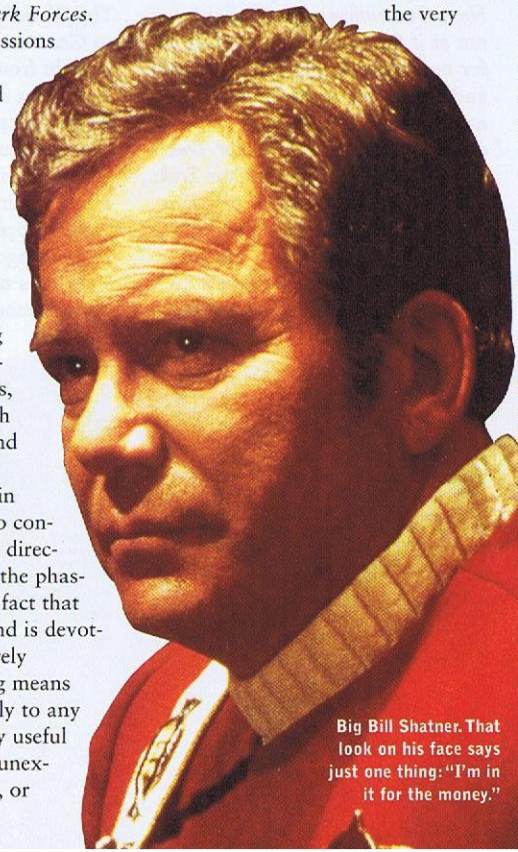


It just isn't the same without those wobbly polystyrene rocks and pea-green women.

Sonic excellence

Generations combines original film footage with the game in a truly compelling, inventive way that really works. The use of texture-mapped 3D worlds is a bold move that adds a new dimension to the gameplay, and the puzzles are both sensible and teasing. All the way through the challenge, there are indications of some considerable attention to detail – from the use of the original actors who perform additional voice-overs, to the colour schemes and interesting background information that embellishes your interaction with the ship's crew.

Should you be looking for a game that truly deserves that much-maligned name – interactive movie – then look no further than this. *Star Trek: Generations* uses original film footage in a witty, and above all, useful fashion that adds a lot to the game. The difficulty settings mean that you can join in at any level, while the 3D worlds open the game to a new audience. PCF



Big Bill Shatner. That look on his face says just one thing: "I'm in it for the money."

Looking elsewhere

If you're an enterprising sort, maybe you can manage these extra treks:

STAR TREK: A FINAL UNITY
£49.99 MicroProse *PCF* 48 **50%**

STAR TREK BORG
£29.99 VIE *PCF* 68 **74%**

STAR TREK: GENERATIONS

- ✓ *Daggerfall*-style 3D engine
- ✓ Three difficulty levels
- ✓ Seamless FMV integration
- ✗ Logical puzzles
- ✗ Annoying loading waiting times

Processor	Min: P90	Rec: P133
Memory	Min: 16Mb	Rec: 24Mb
System	✓DOS ✗WIN 3.1	✓WIN 95
Video	✓VGA ✓SVGA	✗ 3D card

***PC FORMAT* Rating 85%**

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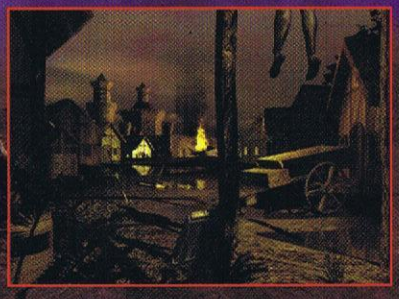

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GAMEPLAY EXTRA

"THE MORE COMPLEX THE INTELLECT, the greater the need for simplicity of play," said the great Captain Kirk. Sad Trekkie **David Bradley** must be a veritable Einstein.

Axelerator

£34.99 21st Century ☎ 01235 851 852

Tony 'posse' Blair's new motor raised eyebrows when it dropped him off outside Downing St.

MAYBE IT'S THE COMBINATION OF speed and potential violence which makes driving games so popular. Everyone loves to burn off their frustrations in a monster motor, with the virtual road removing the need to worry about danger. So, *Axelerator* should be on to a winner with its high-speed, shoot-your-opponents racing format. It enables you to career around 24 different themed tracks, in one of three cars – which you customise with weapons, improved body parts, and even a new paint job.

There aren't many opportunities to do ridiculously foolhardy, possibly life-threatening stunts in *Axelerator*. But, hey! Life's dangerous enough – you non-stop, crazy kids!

You can race for money against PC characters, or even networked human opponents in one-on-one duels or full-on eight car battles. You make your weapon choices, load and save your car, and play a practice game to fully familiarise yourself with the controls (accessed from a 'greasy garage' menu page). It all looks very professional, and the in-game visuals move swiftly and smoothly. It's just a shame that they resemble coin-op efforts from a year or two ago.

Everyone loves to burn off their frustrations in a monster motor

Axelerator is as much fun in network play as most other multiplayer games (killing your friend never loses appeal), and the controls are fairly easy to master. It is irritating that you continually have to push the car into first gear to start – this kind of fiddly detail is out of place in a game that desperately wants to be an arcade racer. There's no chance to perform hair-raising stunts, and you're sadly railroaded by the rigid track layouts. Consider the greatly superior *Interstate 76* (*PCF* 70, 77%), or *Carmageddon* (*PCF* 71, 89%), and *Axelerator* doesn't come out shining like a new coat of turtle wax.

***PC FORMAT* Rating 59%**

Lomax

£39.99 Psygnosis
☎ 0151 282 3000

NOT A LOT OF PEOPLE KNOW THAT at the height of *Lemmings'* success, somebody had the bright idea of suggesting that the little critters star in their own animated TV series. It never happened, but *Lomax* (the gallant knight) was created as a by-product. Now, he's turned up in a colourful 2D platformer, featuring all the animated characters inspired by earlier *Lemmings* games. Lomax must leap and spin his way through bouncy Lemmingland in a quest to defeat Evil Ed, who has usurped control of the lemmings. Needless to say, they're as suicidal as ever.

Our hero can dig like ordinary lemmings, but most of his time is spent spinning dizzily and trying to avoid falling off the bottom of the screen. *Lomax* is quick and very colourful, which leads us to an all important question: can 2D still cut the mustard when platform games such as *Pandemonium!* have now successfully made the transition to 3D? *Lomax* provides evidence that the run-and-jump formula is still alive and kicking... just.

Lomax isn't a new washing powder – it's the moniker of a lemmings lovin' knight.

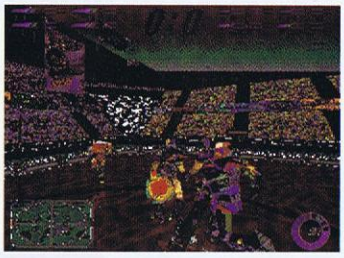
***PC FORMAT* Rating 51%**

Riot

£34.99 Psygnosis
☎ 0151 282 3000

THE FUTURE IS A STRANGE PLACE, where all the things you know and cherish are destined to be perverted and crushed. It is in such a bleak future that *Riot* is based. Punters demand faster and more aggressive entertainment – a return to bloody gladiatorial confrontation swamps the team games we all enjoy today. So *Riot* is born, an extreme contact sport which is a crazed mixture of basketball, hockey and boxing.

Taking control of a five-a-side Riot team, you gain possession of the ball, charge it with plasma from a unit in your opponents' territory, and fire it through the goal ring in the centre. It does sound confusing, but play is straightforward, as is manoeuvring your men. However, it can become repetitive, and the tackles aren't as rough as you'd expect (if you ever played hockey at school, you certainly expect a lot more mindless thuggery than this). *Riot* is slick and smooth, providing your PC has the memory to spare – and is a passable alternative to those multiplayer footy games.



Unnecessary roughness? This lot would knife their own grannies to ensure victory.

***PC FORMAT* Rating 53%**

Blam! Blam! Blam! A psychopath in pink pyjamas says farewell to some furry friends.

Reloaded

£29.99 Gremlin ☎ 01142 753 423

Take six bizarre cross-dressing cartoon characters, and beat into a ridiculous sci-fi plot. Simmer, then serve with a PlayStation. If there's any left-over, re-heat and serve to some unsuspecting PC guests the following day.

This is the recipe for *Reloaded*, the hit console sequel to *Loaded*. It's a tough, would-be-comical shoot-'em-up, which is presented from an unusual God's-eye-view 3D perspective. Unfortunately, it falls short of being an entertaining game. Action occurs over a series of levels, and the characters are fun. Each has a personal reason to hate the CHEB organisation which framed them, and each searches for the culprits (wearing fancy dress gear, and also carrying their favourite weapon). It's very *2000 AD*-cum-*Tank Girl*.

The control method might have worked well on the PlayStation, but it grates a little on the PC

Even in the highest resolution mode, the graphics are somehow vague – especially the baddies who run at your chosen character in droves, but appear featureless and darn unexciting. They're about as scary as your own shadow. They do splat over the ground when killed, though – and it's cool that you can roll boulders around to squish people (sometimes there are even interesting things underneath). However, each level soon becomes dreary.

The control method might have worked well on the PlayStation, but it grates a little on the PC. The keys are *Doom*-like... almost, with (for some weird reason) only the left [Ctrl] button being available as a shoot key. And rather than corresponding to left, right, forward and backward, the arrow keys relate to screen directions (which can be disorientating when looking down from your tree-top viewpoint).

Reloaded is fairly imaginative, and boasts some colourful on-screen action – but it's miles away from emulating its console success.

PC FORMAT Rating 60%

Does cross-dressing, random violence, animated action and carrying a 'piece' intrinsically appeal to you? Thought so.

Actua Soccer Club Edition

£39.99 Gremlin ☎ 0114 275 3423

First out at the end of 1996, *Actua Soccer* was arguably the finest footy game on the PC. Eye-catching and playable, it's still one of the most popular titles to this day, die-hard *Sensi* fans aside. At last, you can play your favourite teams with their latest stats – *Club Edition* is essentially the full version of the game with the current English league teams on board, plus the option of leading your chosen team through a league season. Is this something of a crafty release from Gremlin, given that it's simply a re-worked *Euro 96* engine Maybe. But there's a souped-up front end, with 'sticker book' style photos of all the top players to gaze at, as well as new stats direct from the English divisions.

A sound buy if you don't own *Actua* already

Barry Davies gives the running commentary again, which ensures that this remains a great little game that's invigorated by the latest details. A sound buy if you don't own *Actua* already.

PC FORMAT Rating 75%

Number eight is about to score a fantastic headed goal. Or else the ball's stuck to his head.

Pinball Power Pac

£19.99 21st Century ☎ 01235 851 533

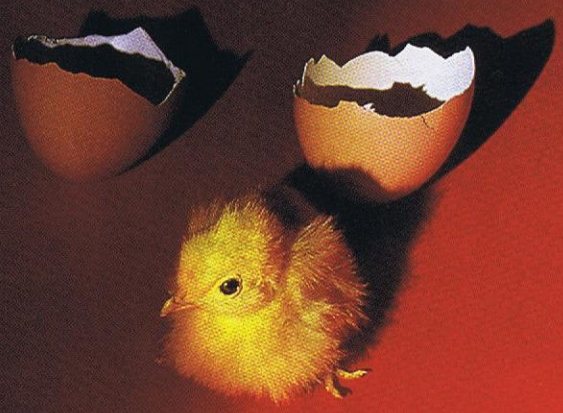
Almost everybody knows that 21st Century has dominated the world of PC pinball games since the start of recorded history. Moses probably enjoyed a nice round of *Pinball Dreams* after an afternoon in the desert, and now you can have five of the best in a single pack: *Pinball Dreams* (PCF 24, 87%); *Pinball Dreams 2* (PCF 34, 75%); *Pinball Fantasies* (PCF 30, 88%); *Pinball Illusions* (PCF 49, 83%), and *Pinball Mania* (PCF 46, 75%). That's 20 tables of silver-ball action.

Pinball tables need to be bright, colourful, and about the same size as a Volkswagon.

On the surface, they're all much the same – you flap your flippers and knock the ball around to rack-up millions of points. But this team do make exceedingly good tables – and from the very first Ignition level, to *Illusions*' Vikings set-up – the fast action is good fun. As it's frenetic, yet also subtle, all these tables look good and play well. Wisely, the dire *Pinball World* (PCF 53, 52%) is thankfully not included.

PC FORMAT Rating 65%

HERE CHICKY CHICKY...



Formula Karts

£29.99 Sega ☎ 0181 995 3399

If you want to witness vehicles whizzing around at vicious speeds in real life, go to a track. It's called Manchester.

THE UNINITIATED MAY BE SURPRISED to hear that go-karting is a rather different experience from driving a car. Being lower to the ground, and without the benefit of an enclosed body, each race is fiercely intense. The lower perspective heightens the feeling of speed and danger even at a mundane pace, while the Earth-bound centre of gravity means you turn on a sixpence. The other drivers aren't faceless characters behind a windscreen, so it's all somehow more personal.

The Earth-bound centre of gravity means you turn on a sixpence

Doubtlessly influenced by both *Manic Karts (PCF 54,* 81%) and *Super Mario Kart* (the Nintendo version), Sega's latest race game almost manages to recreate all these essential elements of the sport. You forgive the less-than-perfect graphics because *Karts* moves very fast, but is sadly littered with tiny flaws. The actual track layouts are misleading, and it's very easy to steer the wrong way. Taking the occasional 'short cuts', which exist on each of the eight tracks, is like shooting yourself in the foot. Since they're all essentially off-road, they slow your kart down, so you lose any headway you might have gained by leaving the main road. Why are they there? And the irritating commentator who shouts "Get going!" when you slip behind is just asking to be run over.

That said, the internationally themed race-courses all feel rather different, and the choice of teams means that you pick a kart which suits your style of play. Each kart has its own ratings for acceleration, speed and tyre-grip, and the handling feels right. Your jaw is not going to drop looking over your shoulder at *Formula Karts* – but with the choice to play in Single Races, Arcade Races, or a full Championship – it's a fair title so long as mindless track action is your own particular can of oil.

PC FORMAT Rating 70%

"Stay on the road. I told ya boyee – *stay on the road!*" It doesn't pay to leave the beaten track in *Formula Karts*, because the 'short cuts' invariably slow you right down.

The X-Miles is a cunningly clever, attention-grabbing, zeitgeist-courting play on words. Not.

Rally Championships: The X-Miles

£14.99 Europress ☎ 01625 859 333

DO YOU THROW YOUR SECOND-HAND Volvo into hand-brake turns at every opportunity? Are you always first away when the lights turn green, flying around every corner as fast as the clapped-out engine will allow? Then you need to settle down and play at being a rally racer in the comfort of your own home. *Network Q RAC Rally Championship (PCF 63,* 80%) provides just such an opportunity to aspiring road-hogs, but you've no doubt found that it's over all too soon. Have no fear – the Europress posse come to your aid with 10 new tracks.

In each, the scenery is detailed and attractive, and there are some classy new touches – as you speed through the desert level, the dirt track becomes hard to follow, and comes with a selection of testing jumps and winding tunnels.

PC FORMAT Rating 79%

Zork Legacy Collection

£40 Activision ☎ 01895 456 700

SEVEN GAMES AND A HINT BOOK IN one package – and not just any old games either: this is the history of *Zork*, one of the first adventure games. Following a distinguished career as a text-based game back in those nebulous 'good old days', the land of Zork went through five incarnations, before receiving a new lease of life only a few years ago in the form of *Return to Zork*. This epic features a cast of real actors in cinematic encounter sequences, while the underground empire is depicted with marvellous pre-rendered graphics. Hot on its heels came *Zork Nemesis (PCF 58,* 82%), which tells most other cinematic point-'n'-click games where to get off. The early *Zork* adventures are for pure nostalgic purposes only. As with *Blake's 7* and *The Clangers*, these things are better in your memory than on the screen in front of you today. *Return* and *Nemesis* are respectable modern fantasy adventures with enjoyable plots, challenging puzzles, and a level of character interaction which makes the land feel truly populated.

Return to Zork is not a dyslexic's way of saying they've renounced vegetarianism.

PC FORMAT Rating 75%

KEEPER'S HERE

dungeon KEEPER

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STAR WARS SHADOWS OF THE EMPIRE

NINTENDO 64

THE GRAVEYARD

There are games that don't just deserve to die – they need to be tortured and humiliated as well. Here's a prime example:

REVOLT OF DON'S KNIGHTS

£9.99
Emerald Software
☎ 0171 386 7822

It's a Legoland knight, but you soon see him off with your crossbow. Oh no you don't, because he's clearly just scenery.

Imagine a land named Don, with a King called Albert, whose arch-enemy is known as Raymond. Not quite charged with an epic sense of legend, are you? As Albert's only trusted servant, it's your job to penetrate Raymond's lair, and locate a valuable scroll that incriminates five of the land's top knights in an evil conspiracy.

So begins a frighteningly poor RPG, and you won't be surprised to hear that its recommended spec is a 386/25 PC. It's brand new, and yet pathetically behind the times. The design is so completely dated that it actually relies on the archaic memory management of DOS, meaning that you need to fight to get it to run on your system. Fearing that this might be the case, the developers have included (on the CD) the necessary files to create a dedicated boot disk with which to launch *Revolt*. Frankly, it's not worth even half the effort.

We don't care what they say, it's just not scary to be faced with a knight carrying a little bunch of pretty blue flowers.

Not even the very sudden decision by Emerald to move the title to the budget price bracket saves it from being plain abysmal. Everything about *Revolt* looks half-baked – from the manual badly translated from German ('each of them infatuated with desire for gold and blood... the revolted knights owned the important plans') – to the rooms which all appear identical. The automatic mapping facility proves to be the only part of the game you're truly pleased with – simply because without it you're hard pressed to tell one bit of stone corridor from another. What a farce.

The manual boasts that you can communicate with 'several' characters – what, that many? In fact, almost everyone you meet ignores you and just gets in the way – and if your frustration brings you to the brink of sudden violence, you soon discover you can only attack a limited number of characters as well. Yep, *Don's Knights* are definitely revolting.

This ruthless Medieval character is one of Don's knights. Don Corleone? Don Juan? Donnie Brasco?

PC FORMAT Rating 14%

Helicops

£24.99 7th Level ☎ 01625 500900

"JUST GRAB YOUR STICK AND PLAY" enthuses the *Helicops* box, before launching into the features list. This begins with the unforgettable line: "Five choppers. Strap one on and command your air space." What's it all about, then? Casting childish smut to one side for a moment, the game itself is a futuristic helicopter blast-'em-up. The controls are pure arcade-game, and although there's no chance of you losing the plot, there's also an equivalent lack of opportunity to pull off any fancy manoeuvres. The missions are all very simplistic; the enemies plentiful; the targeting system hugely forgiving, and it's really difficult to win. Graphically, *Helicops* is impressive (but slow), apart from the sky which looks as if it was painted by a considerably less-than-talented 12-year-old.

Comanche 3 is far superior to this game in every way, even if it does cost a few quid more. Just pick up your wallet and pay.

PC FORMAT Rating 52%

The Helicops attempt to blow away the Battersea Power Station, believing it to be partly responsible for the Floyd's *Animals* album.

Bug Too

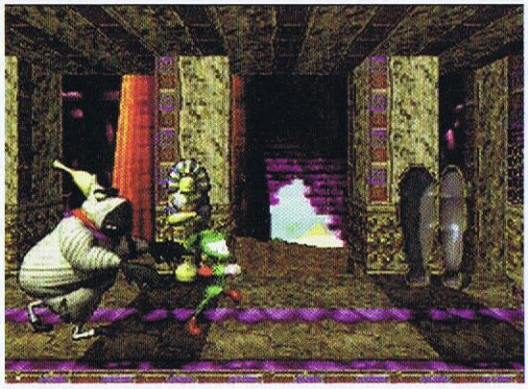
£29.99 Sega ☎ 0181 995 3399

LURKING SOMEWHERE BEHIND THE smart perspective of *Bug Too* is a pot of addictive run-and-jump action. Three insect buddies are keen to make it as stars in the film industry, and the bug cinema boss sets them the task of making an entire series of films in one day. To prove themselves, they must 'act' their way through various themed levels – and when you realise that scenarios include 'Weevil Dead' and 'Bug to the Future' – you know what level of humour to expect.

Although the levels are linear, your movement isn't on rails as it is in BMG's *Pandemonium!*, and you feel in complete and utter control of whatever critter you choose to play. At times, there's something of an action-adventure hidden inside *Bug Too:* as you follow one path to flip a switch, this opens up a route for you elsewhere. However, there's no concealing its console roots, and you spend most of the time leaping skywards to grab gems, while also attempting to avoid the very nasty sudden-death ledge drops.

Your cinematic enemies are imaginative in their antics, and provide some worthy competition. Check out the Frankenstein who electrifies you, or the ghouls and their Gothic host of rattling chains. It moves unfailingly fast, and while the 3D sprites themselves are not state-of-the-art, *Bug Too* is a clear indication of what platformers are actually capable of on the PC.

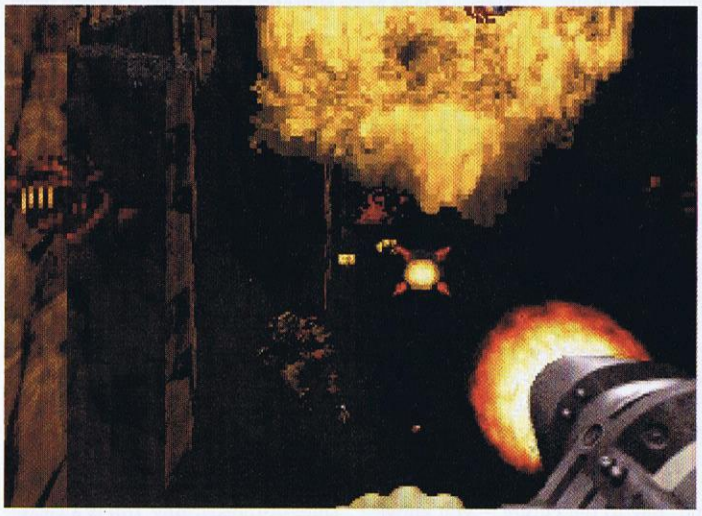
PC FORMAT Rating 78%



The Bangles sang the seminal *Walk Like An Egyptian*, which was a load of crypt, to be honest. Anyway, here's one that's not so bad...

PRICE BUSTERS

Until we took him under our wing, **David Bradley** had nothing to call his own except a pair of trainers and a packet of mints. Now, surrounded by supermodels and 'It' girls, he's forgotten those money-saving skills.



Duke Nukem 3D £9.99

Kixx ☎ 0181 780 2222

Budget game of the month

The wealth of imaginative weapons (miniaturiser guns; mines; dynamite) in *Duke Nukem 3D* takes this game beyond the usual first-person 3D shoot-'em-up. As the rock-hard Duke, it's your job to charge around a futuristic Los Angeles picking up keys and wiping out monsters. The 3D engine – although nowhere near as sophisticated as *Quake's* – is fast, and game designer Apogee has gone all-out for humour in the many set-piece locations. Duke can spy on other parts of the map by using CCTV cameras, see his own reflection in a lavatory mirror, and start the film running in the local cinema. As a multiplayer game, *Duke Nukem* is maniacally funny – and with underwater and zero-G levels as well, this is a must if you're a fan of networked or single-player action.

***PC FORMAT* Rating 82%**

Ultimate Soccer Manager 2 £9.99

Sierra Originals ☎ 0118 920 9100

You have to be a financial wheeler-dealer, as well as a tactical master in the training ground, to tackle Sierra's hit management sim. Although it has last season's stats, it's still a must if you're a fan of realism because it gives you the opportunity to look after a team in the English, French or German leagues (keeping you busy for ages). You can devise training schedules for individual players, talk to foreign agents, and pop between boardroom and changing room in an effort to turn your club into a success. This year's crop of updated manager titles will no doubt put *USM2* in the shade, but it's the best of the genre available at this price.

***PC FORMAT* Rating 79%**

Doom 2 £14.99

GTi ☎ 0171 258 3791

Some say it's aged badly, but *Doom 2* still scares the pants off you in a fashion that *Quake* has never been able to. Essentially, it's *Doom* with some new levels and (just) one new weapon. However, all the new baddies are truly the stuff of the most nerve-shatteringly horrendous nightmares. It's been a couple of years since it came out, and we are *still* waking up in the dead of night screaming about the fire-starting Arch-Vile tearing our goose-pimpled flesh away. But, on the downside, *Doom 2* is ridiculously hard in some places. It's simply no fun playing a game that is literally too challenging, mainly because there is no enjoyment in never succeeding. Its difficulty stems from a vast number of enemies, rather than clever room design. Regardless of this, it remains a classic.

***PC FORMAT* Rating 85%**

Ultimate Doom £12.99

GTi ☎ 0171 258 3791

Everyone should own *Doom* – it's way up high in the PC Hall of Fame. Id proved itself master of the first-person action game – the superb 3D level design was unsurpassed (until *Quake*), even by its sequel, *Doom 2*. The *Ultimate* prefix means that Id tacked an extra level – Thy Flesh Consumed – onto the end of the original release. By doing this, they not only demonstrated some rather crafty marketing strategy, but also showed all the amateur level designers how to do it properly. *Doom* can't compete graphically with the full 3D of today's shoot-'em-ups, but nothing comes close to the utter terror of being 'Knee Deep in the Dead' for the first time.

***PC FORMAT* Rating 80%**

Heretic £12.99

GTi ☎ 0171 258 2791

It's that 3D game again, but this time it's wearing its swords-and-sorcery costume. Id created another winner when it added the ability to fly to the *Doom 2* engine – this removed that slightly flat feel the earlier games couldn't shake, however hard they tried. The textures and sprites are far more detailed and attractive than those featured in Id's earlier efforts – but although the swooping red demons give you a start, it's still a lot less scary than those hell-and-back scenarios. However, imaginative new weapons, plus a rather dangerously big final boss (wait and see what happens when you finally get to that temple) make *Heretic* far superior to most *Doom*-wannabies. But at the end of the day, a magic crossbow doesn't compare with the mighty BFG9000.

***PC FORMAT* Rating 75%**

Williams Arcade Classics £9.99

GTi ☎ 0171 258 3791

If graphics and sound don't matter to you, the titles that made coin-op giant Williams successful are here to please you all over again. *Defender* (and *Defender 2)* was *the* arcade game of the 1980s, and now it's presented in pixel-perfect detail. The pre-Gauntlet charm of *Robotron 2084* is here for you to sample at will; as well as *Joust,* and the immortal *Asteroids.* If you have a long memory, you'll remember *Sinistar* and *Bubbles.* Every one was a winner, and the 1997 verdict is a trifle predictable: turbo-charged gameplay, embarrassing visuals and general silliness. Play it for a retro trip, but don't let your friends know you bought this instead of *Quake.*

***PC FORMAT* Rating 75%**

Mortal Kombat 3 £12.99

GTi ☎ 0171 258 3791

With a selection of 14 characters to play, a bucket of good-old 2D kick-and-punch action, combo moves and special death moves – *MK3* sounds like typical beat-'em-up fare. But that's only half the story: when it was first released just over a year ago, *MK3* was undoubtedly the best beat-'em-up available – proving that the PC is more than capable of rivalling a coin-op machine in the kung-fu carnage stakes. However, in the wake of today's 3D virtual punch-'n'-kick outings, it's looking a little dated. But with comedy elements such as Babalities (turn your opponent into a harmless child) and Friendship Moves (love your enemy to death) you can't go wrong. Just don't combine the pair.

***PC FORMAT* Rating 80%**

MegaTraveller 2 £4.99

Prism Leisure Corp
☎ 0181 804 8100

It's the stuff of old-fashioned RPG games: select a party of adventurers (which are rated in terms of skills and abilities), then head off to seek your fortune in deepest space. Point-and-click controls enable you to interact with aliens, buy equipment or simply explore. There are 147 worlds to visit and on each you can walk around the spaceport in a top-down view, where your team is identified by colour coding. Flying between locations themselves is achieved in true *Star Trek*-style, complete with enemy ships appearing on the bridge view. It was interesting five years ago, but 'feels ancient' is an understatement, but we can't think of anything quite so polite.

***PC FORMAT* Rating 15%**

Ascendancy £9.99

Virgin White Label
☎ 0171 368 2255

Resembling a demented cross between *SimCity 2000,* a traditional war game, and any NASA astronomers' favourite bedtime reading – *Ascendancy* kills your social life with its most addictive galactic empire-building gameplay. Build both a factory and a lab on the homeworld of your choice; research some nifty weapons technology in case of alien invasion; put spaceships together, and generally go forth and multiply. There's a hell of a lot of detail here, so you're glad of the tutorial, which in itself takes you hours to play through. It's not original, but it has depth to die for, plus a learning curve most other action games can't hope to match.

***PC FORMAT* Rating 80%**

Command: Aces of the Deep £9.99

Sierra Originals ☎ 0118 920 9100

The majority of submarine games tend to be complex and, dare we say, a little dull. Although there is a hefty manual, Sierra's *Command:AOD* is not difficult to get into, and plonks you in a U-Boat against the might of the Allied navy in WW2. There are historical scenarios covering the entire war and you're updated according to the appropriate advances in technology. Sound is used effectively in order to conjure a sense of atmosphere and you hear all the whirrs, clanks and swooshes of underwater warfare. This was the first title to utilise voice-control with which to issue your commands, so get yourself a microphone. You can contact other subs to hunt in packs, but after a while it becomes about as interesting as talking to a kettle.

***PC FORMAT* Rating 75%**

Flight of the Amazon Queen £9.99

GTi ☎ 0171 258 3791

When their plane goes down in the jungle, pilot Joe King, his mechanic and their beautiful (but snobbish) passenger Faye Russell become embroiled in a dangerous quest. This involves a missing Amazon princess and the deranged Dr Ironstein. If you're a frequent visitor to the land of PC adventure titles, you'll see much that is familiar. It's very *Monkey Island...* it wishes. The puzzles are not particularly challenging, the humour is weaker than watery orange squash, and the cartoon-like graphics look extremely derivative and out of date. It's a big game, and it does try hard with the jokes – but it often falls flat on its face, instead of swinging its way across the roof of the jungle. There are better adventure games. Much better.

***PC FORMAT* Rating 64%**

Deadline £9.99

Psygnosis Argentum
☎ 0151 282 3000

Your mission in this isometric strategy title is to protect the populace – at any cost. In *Deadline,* you equip a squad of anti-terrorist soldiers according to your resources, then send them off to tackle dangerous hostage situations. The clock is ticking as you give your troops orders to attack, guard or scout around. You can set the level of initiative each possesses and sometimes it's considerably wiser to allow them to make their own decisions when it comes to cutting electric power, accessing buildings or responding to fire. Let's face it – can you perform any of these tasks? *Deadline* has a tendency to be extremely difficult and it's nowhere near as good as wargames from the *Command & Conquer* school. Anyway, we don't like deadlines.

***PC FORMAT* Rating 69%**

BUDGET CHARTS

The Elspa top 10 budget chart

1 C&C Red Alert: Counterstrike
(1) Virgin £14.99 *PCF* 70 (79%)

2 Theme Park EA
(2) £12.99 *PCF* 59 (80%)

3 Dark Forces Virgin
(3) £14.99 *PCF* 42 (87%)

4 Discworld Psygnosis
(NE) £19.99 *PCF* 68 (84%)

5 PGA European Tour Classic
(7) EA £11.99 *PCF* 69 (82%)

6 Ultimate Doom GTi
(NE) £12.99 *PCF* 71 (80%)

7 Sensible World of Soccer Euro '96
(NE) Virgin £9.99 *PCF* 69 (68%)

8 Doom 2 GTi
(NE) £14.99 *PCF* 71 (85%)

9 Screamer Virgin
(NE) £9.99 *PCF* 63 (88%)

10 TIE Fighters Collectors CD
(4) Virgin £14.99 *PCF* 64 (90%)

Last month's position is in brackets

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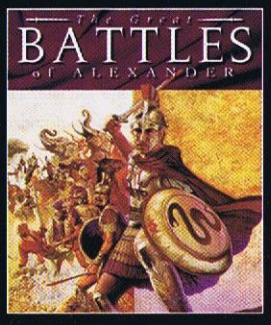

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TIPS&TACTICS

"YOU LOOKIN' AT ME? You lookin' at ME?" Groggy from a sleepless night milking stoats, **David Bradley** takes a revolver to the latest releases.

SANDWARRIORS

Gremlin *PCF* 70 (84%)

SO – THE EVIL SET HEGEMONY continues to challenge the righteous forces of Horus? If Gremlin's sim is proving a little tough, help is here in the form of our *Sandwarriors* cheat files. You find them on this month's CD – copy the ones you want to use into the **Data** folder in your **Sandwarriors** folder (select them from the disc menu and this is done automatically), then use them together or individually. As long as they're in the **Data** folder, their function is activated.

mission.won

A particular mission proving a bit too difficult? Hit [-] and [+] on the numeric pad simultaneously, which automatically completes all your scenario objectives. Return to base to move to finish.

weapons.all

All those gloriously imaginative weapons can be yours. Copy this file to your PC, and begin to play the game. Fly through an ordinary ammo pack to acquire everything, from the Porphyr cannon to the Harakhy heat-seekers.

infinite.amo

Any weapons you have mounted on your craft will never, ever run out of ammo.

weapons.x2

See off the competition. All your weapons fire twice as quickly, and also cause double the damage. Nothing stands in your path.

energy.max

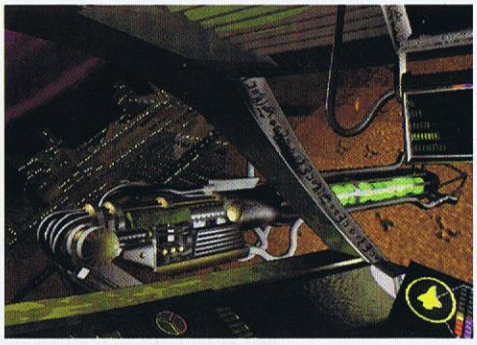
This provides you with an unlimited power bank. You never again have to take time out to visit those boring recharging tunnels.

shields.x2

Your ship's defensive shields recharge twice as quickly.

hull.max

This cheat file ensures that the hull strength of your groovy little vessel is unlimited.



As you turn around to make an attack run, your guns glow with destructive energy. Is that a leisure centre on the left?

setian.bug

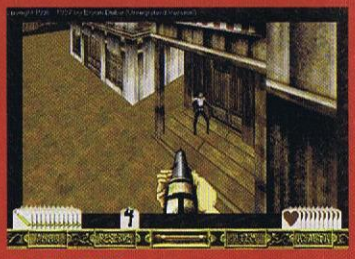
This makes sure enemy missiles aren't able to lock onto you; anti-aircraft turrets can't track you, and (wait for it) anything you target is vapourised by simply hitting [k]. However, this doesn't work on the enemy motherships. Nifty? You bet your gold-plated sarcophagus.

IT'S A SWINDLE How to wangle with gargantuan guile...

RED ALERT: COUNTERSTRIKE

Virgin/Westwood *PCF* 70 (79%)

Can there be anyone left who hasn't worked this one out yet? Oh well, if you're one of those bringing up the rear, here's the cheat which takes you to those secret monster ant levels. At the main menu screen, hold down the left [Shift] key, and right-click on the round speaker-like object in the top right part of the background. You're immediately asked to select a skill level, and are taken from there into the hidden missions (where Allied bases are under vicious attack from a taskforce of psychotic ants). And there it is. Just remember to watch out for those fearsome fire-breathing red critters, if you value your life.



OUTLAWS

LucasArts *PCF* 70 (59%)

Ride 'em, cowboy! It's back to the Wild West in LucasArts' rattlesnake-rustling lasso-'em-up. Here are those cheat codes, in case you need help getting some posse.

olairhead Enables you to take off and fly like a bird. Use [X] to rise and [C] to fall

oljackpot Provides all the things a good lawman needs (keys, ammo, etc)

olpostal Delivers unlimited weapons and bullets

olcds Provides super map mode, in which everything is revealed

DIE HARD TRILOGY

Fox/EA *PCF* 67 (82%)

It's possible to cut Detective John McClane some slack in each of the sub-games that make up this three-parter. In any section, simply pause the game and press [R] and [2] simultaneously in order to enable the cheat mode, then follow our simple guide to terrorist-bashing:

Die Hard

[Right], [Up], [Down], [E]
God mode

[Right], [E], [Down], [O]
Huge ammo reload

[Right], [Up], [Down], [Down], [E], [Right] (repeat)
Helpful gun supply

Die Harder

[Right], [Up], [Down], [E]
Once for guns, twice for god mode

[Right], [E], [Left], [O], [A], [Down], [E]
Missiles and grenades on demand

Bruce Willis, moonlighting as a cab driver.

Street violence, bad driving, dead chopper pilots – all in a day's work for the NYPD.

Die Hard With A Vengeance

[Left], [O], [Up], [Down], [E], [Right]
Infinite lives

Go on – give 'em hell.

THEME HOSPITAL

Bullfrog *PCF* 68 (90%)

YOUR HOSPITAL SHOULD BE UP AND running smoothly if you followed our crash course in clinic design in last month's issue – but remember, the challenges you face get progressively harder, so plan ahead.

Emergencies

If you can get by without turning a crisis into a drama, you significantly boost your financial status. When your very first emergency occurs, you see a flashing pop-up icon. Click on it, and you're told just what the problem is, and how many people are involved. Accept the situation only if you think you can definitely handle the respective disease – if you're likely to fail, it's better for you if the patients croak elsewhere!

Grot on the Internet, or patient-curing? This doc' makes an executive decision.

Your rooms handle about six patients within the emergency time, but this depends on the distance of the room from you helipad (often located near the hospital entrance), as well as the overall number of patients. Build another room quickly if you reckon your existing facilities can't cope (or aren't close enough to the helipad). If all your rooms are clogged-up with queues, drag the emergency patients to the front.

Training

If your hospital improves to the stage where it's able to train new doctors – do the job professionally or your staff won't be skilled enough to handle their tasks. Build a training room, and stick one of your three consultants in it, (where they immediately start lecturing). Then put an unskilled junior or doctor into the room, and they sit down to listen. Their skills increase, and they learn the same abilities as the consultant – and eventually become consultants themselves. Just bear in mind that the effectiveness of the consultant's lecturing depends on the staff-student ratio, so if the room is full of juniors, they all improve at a slower rate.

The sign of a thriving hospital is people queuing up to be seen. Or not, if they're invisible.

These new-fangled 'pot your way to good health' policies have yet to be proved successful...

SWIZ IT! A gloopy dose of jiggery-pokery never did you any harm...

SCORCHED PLANET

Virgin *PCF* 63 (79%)

For a burn-a-thon with open-ended gameplay and loads of levels, you can't go wrong with *Scorched Planet* (especially when you consider that we gave you some lovely level codes last month). Still too hard for you? Give yourself a much-needed pick-me-up with these two in-game cheat modes:

fatal
For all weapons

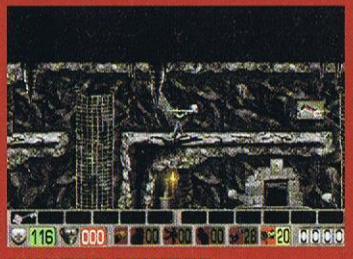
allah
To toggle invincibility mode

Now you can zoom about destroying things to your heart's content. This is institutionalised vandalism at its best.

ELDER SCROLLS: DAGGERFALL

Virgin *PCF* 63 (81%)

Judging by the many hints and tips we receive, this superlative role-playing extravaganza remains a firm favourite among the criminal classes. Many thanks to James Glen of Westbourne for noticing that if you use your Loiter option inside a village shop, you can hang about until the evening (and still remain inside when it gets dark). This is every vagabond's dream, so pick up the wares at your leisure, and (ho ho) sell it all back to the gullible victims in the morning. Please don't attempt this in real life, unless you desire to wear a fetching set of stripy overalls, courtesy of Her Majesty's Crown Prosecution Service.



HUNTER HUNTED

Sierra *PCF* 69 (29%)

An unfortunate mistake best swept under the carpet? No! Maybe you're one of the platform fans who bought this game and have – incredibly – managed to get some mileage out of it. Here are some cheat codes so you can get more for your money:

snellings
Maximum health

invincible
Makes you invulnerable (now, there's a surprise)

lukaszuk
Every single weapon

cole
All the weapons AND invincibility

ALIEN TRILOGY

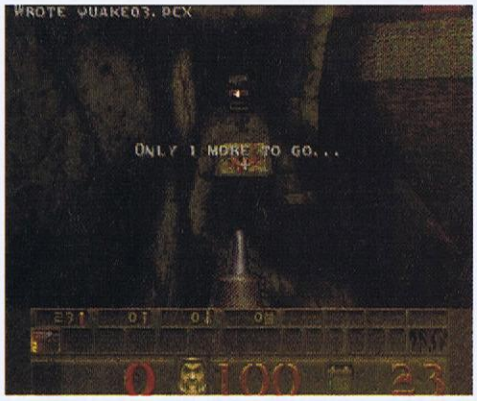
Acclaim *PCF* 66 (55%)

Although it's undoubtedly not our favourite shoot-'em-up, there's still nothing wrong with a bit of creepy alien action. Are those grizzly face-huggers getting you down, and the chest-busting monsters giving you a nasty case of indigestion? What do you mean, the tips we previously gave you didn't get you out of trouble? Still, we're giving you another chance to sort yourself out. We're nice like that (no, really). Shoot to the ever-useful password screen and enter: **nadiapopovxx**, where 'xx' are the level numbers (01 to 34). And – Hey Presto! – you skip straight there. Now, isn't that wonderfully easy?

QUAKE: DISSOLUTION OF ETERNITY

Activision *PCF* 70 (84%)

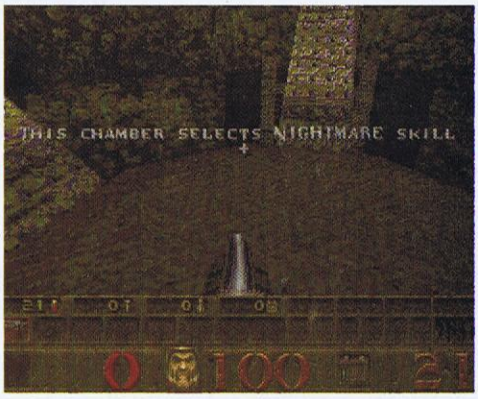
1 How to have your *Quake* and eat it – if Activision's new add-on isn't hard enough for you, we have some good news: N. Bickerton of Ipswich has discovered the secret entrance to Nightmare mode. Simply activate the switches high on the walls of the chambers to the right and left of your starting location, by shooting directly at them.



2 You're told next that there's one more to go, but there's no other switch visible in either of the chambers. It's hidden in a place you'd never normally look: behind a slipgate. Head back to the room behind your start position. Enter the chamber, and sneak to one side of the slipgate. You see the switch on the wall behind it (just above head height).

3 Shoot at it from this angle to complete the sequence. Run back to your starting position, and you see that on either side of the exact entry location are two columns, which rise out of the ground when you approach. Jump onto one of them, and you are slowly raised up into a secret chamber above the start room (which you normally don't see).

4 Step away from the platform, and walk off those metal beams – you're then informed that you're in the right place for the Nightmare level selection. Within this secret chamber, there's a slipgate as usual, and all you need do now is jump through it to be taken to the hardest *Quake* level ever. So, are you brave enough for the terrors which follow? PCF



X-MEN: CHILDREN OF THE ATOM

Acclaim *PCF* 69 (76%)

More fantastic than the fantastic Four; even more amazing than The Amazing Spider Man – why, it's the X-traordinary X-Men, so get ready to beef yourself up with some hardcore killer combo moves. We gave you Wolverine and Psylocke's special actions in last month's issue, and here are four more characters. Next month, we give you the final four.

Corresponding to the respective joypad/stick controls:

Punches (jab, strong, fierce) [a], [b], [c]
Kicks (short, forward, roundhouse) [x], [y], [z]
Directions (forward, backward, down, up) [F], [B], [D], [U]
Tap key for more hits [!]

And... there are two special tricks you can pull off at certain times: X-Ability uses some X-Power, and Hyper-X uses all your X-Power.

Colussus

Giant swing [D], [DF], [F] + punch
Power tackle [D], [DF], [F] + kick
Body press (only on a fallen opponent) [D] + punch
Series combo [a], [x], [c]
X-Ability Super armour [D], [DB], [B] + [a b c]
Hyper-X Super dive [D], [DF], [F] + [a b c]

Sentinel

Rocket punch [D], [DF], [F] + punch
Sentinel force [D], [DF], [F] + kick
Body press (only on a fallen opponent) [D] + punch
Spinning dive [U], [D] + [c]
X-Ability Flying [D], [DB], [B] + [a b c]
Hyper-X plasma storm [!], [D], [DF], [F] + [a b c]

Cyclops

Optic blast [D], [DF], [F] + punch
Gene splice [!], [F], [D], [DF] + punch
Double jump tap [U] in mid-air
X-Ability Leg throw [DB], [D], [DF] + [y] or [z]
Hyper-X Mega optic blast [D], [DF], [F] + [a b c]
Hyper-X Controlled beam [D], [DB], [B] + [a b c]

Silver Samurai

Shuriken [D], [DF], [F] + punch
Sword slices [F], [D], [DF] + punch

An X-Man demonstrates the unequivocal fact that too many alcopops can result in strawberry milkshake chuck-a-thons.

X-Ability Blink [D], [DF], [F] + kick
X-Ability Power-up [D], [DB], [B] + punch

([a] = thunder, [b] = ice, [c] = flame)
Hyper-X Lightning sword [D], [DF], [F] + [a b c]
Hyper-X Triple shuriken [D], [DB], [B] + [a b c]

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Mouse House	£1.99
Mouse Mat	£2.49
Mouse Mat (Novelty)	£2.99
Mat (Forever Friends)	£7.99
Mat & Rest Loony Toons	£9.99
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3.5" Disk	50	£3.99
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Copy Holder	£7.99
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**All Prices Include VAT **

**All Prices Include VAT **

mind games

gma 1.5T SYSAMRS10C0
mporal/ memory
emotion /
ccipital/ visual
:G
ontal/ intelligent
planning
arietal/ sensory
motor

Bradley Elwood Gaston
24
Rookie

Psi-stat* *Active
Psi-Training* *None
Psi -Strength* * *
73.34 s.p.

Sigma 1.5T SYSAMRS10C0
ET:G
R
Sight/
453
Anxiety/

Ok I'm going in. This place is real dark I can only just make out some packing cases bearing 256

Sigma 1.5T SYSAMRS10C0
ET:G
R
Synapses + stimulas/(fear)
Neurotransmitter Rate 33.56%/

Something's in the corner. It's small, scuttling around. Rats??

It could be rats (**** I hate rats ****)

gma 1.5T SYSAMRS10C0
T:G
eart rate/
(REG)
erebal cortex
timulus/

Just sweep the TRACKER across the room... like they taught us in training. Regular sweeps.

Finger on the trigger -safety catch off

Sigma 1.5T SYSAMRS10C0
ET:G
R
Directions/
(slow)
Anger/
Receptors concentration level..HIGH

This thing's heavy-feeling tired-should have gone to bed earlier last night-I'd better give Carla a call when I get back.

Sigma 1.5T SYSAMRS10C0
ET:G
R
Auditory function/
Smell/
Adrenaline supply/

There! Whats that? It's a Brainsucker!! Moving fast to my left. AIM!!!

Don't stand there watching it! Get a bead on it.

igma 1.5T SYSAMRS10C0
T:G
Auditory/
(REG)
Smell/

Fire two bursts... aim two more bursts aim low-did that hit??What a stink!!!!!

Spots of green gunk!! ...there gotcha, you creep. Yeah!

Serotonin max (fear)/
(paralysis)
Noradrenaline/
(Fight/run response) 65%
Rage arousal/
(off scale)
Heart rate accl/ 25%
Febril Deterioration/
WARNING WARNING!!

Where is the body? Just around this corner- I think it crawled into here... WHAT? ARGHHH!!!

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Sigma 1.5T SYSAMRS10C0
I....don't know... I cannot move I cannot./...
..◊..◊◊◊ ..◊...25..//
3456846.....666
§§§
ET:G
R
error0%error0%
erroerrorerror
errorerroerror
errorerror
unknown unknown
unknown
UNKNOWN UNKNOWN
UNKNOWN
HJ658JJJLFG6
7778BVMN.....
transmission end

track us down at www.microprose.com but beware of the brainsuckers!

X·COM

apocalypse

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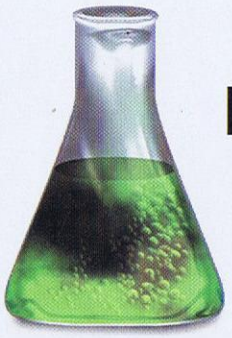


TRIED&TESTED

This month's top hardware and software

106 Supertest

Every month, we get hold of a great big pile of PC hardware, and examine the whole cockadoodie bundle under our skyscraper-sized microscope.

116 Hardware

Hardware. It's made of metal, plastic and silicon. It plugs into your computer. And it does really great stuff. We review it by the boatload.

127 Software

You can't hold data in your hand. It doesn't smell or taste of anything. But without it, your PC is a useless pile of metal, plastic and silicon.

Adam Waring
T&T Editor

Another month – or should we say four-weekly lunar cycle – has passed. And so it's time for the latest visit to the haven where hardware and software combine: the love nest known as Tried & Tested.

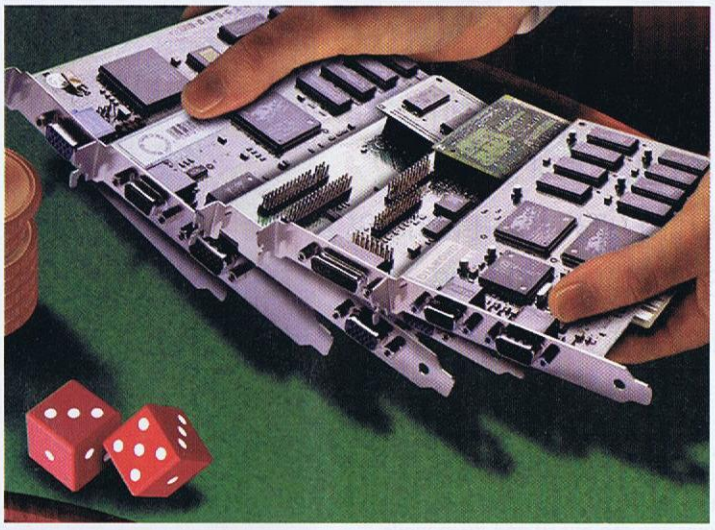
We review a stack of computers this month – not any old PCs, mark you, but the very cutting edge. Buried deep within the casing are spanking new processors: AMD's K6, Cyrix's MediaGX and Intel's P2. We want them all.

We also check out Kodak's DVC300 video camera – one of the first devices to use the USB standard; deafen our side-of-the-head things with a 'home cinema' speaker set-up; and for a bit of light relief, we waggle away with a selection of joysticks.

On the software front, Microsoft's *Home Essentials* boasts a bundle of goodies for a fraction of their individual selling price. We also sound-test a whole medley of music packages, plus get a good feel of *Texture Creator*.

Yes indeed – there is something, as they say, for everyone.

ADAM WARING



106 Supertest

They're clunky, they're funky, and they slot right into your PC's motherboard. Yes, they're 3D cards, and they open a whole new universe of games so realistic, they're trouser-droppingly scary. But wait! Should you go for a 2D/3D card, or a 3D-only card? And what titles work with which card? We tell you all you need to know.

122 New wave PCs

Blinkin' flip – has that new PC you've bought just gone out of date? We test the P2, K6 and MediaGX processors.

127 Rescue utilities

Wiped important data? Reformatted your hard drive? Lost your life's work? Time to come to your PC's rescue.

REVIEWED THIS MONTH

106 3D cards Supertest:
108 Apocalypse 3Dx; GrafixStar 450; Intense 3D 100
109 miroCrystal VRX; Monster 3D; Mystique 220
110 Nitro 3D; Righteous 3D; RV-Flash
111 Stealth 3D 3000; Stingray 128/3D; 3D Blaster PCI
112 3D Pro Turbo PC2TV; 9FX Reality 772
116 Hardware reviews:
116 MMX OverDrive
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117 Kodak DVC 300
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120 SnapMagic; Multimedia Magic; Miromedia PCTV; Telephoto and Wide-Angle Conversion kit
123 Awesome P2/266
124 Platinum K6 200
125 Presario 2110
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131 Texture Creator
132 Music Studio
132 Music Ace
132 SoftSynth
132 Multi-Music
135 Microsoft Home Essentials 1997

RECOMMENDED PC FORMAT GOLD AWARD RECOMMENDED

not a
y, you
We don't
out our
ORMAT
to any waif
ay. Only the most
ving cases receive one.

The *PC FORMAT* review policy

The Tried & Tested team adhere to one overriding principle – to provide you with comprehensive and detailed reviews that you can wholly trust. Each month, we review a wide range of PC hardware and software, and put everything through a series of gruelling tests to determine the best kit for your hard-earned cash. The main question on our lips is: "Is it worth the money?" and would we, as reviewers, buy it? All the products *PC FORMAT* chooses to review are tested by experts, so we really can distinguish the winners from the wannabes. What's more, you won't catch us reviewing prototype hardware or unfinished software – and that's a guarantee.

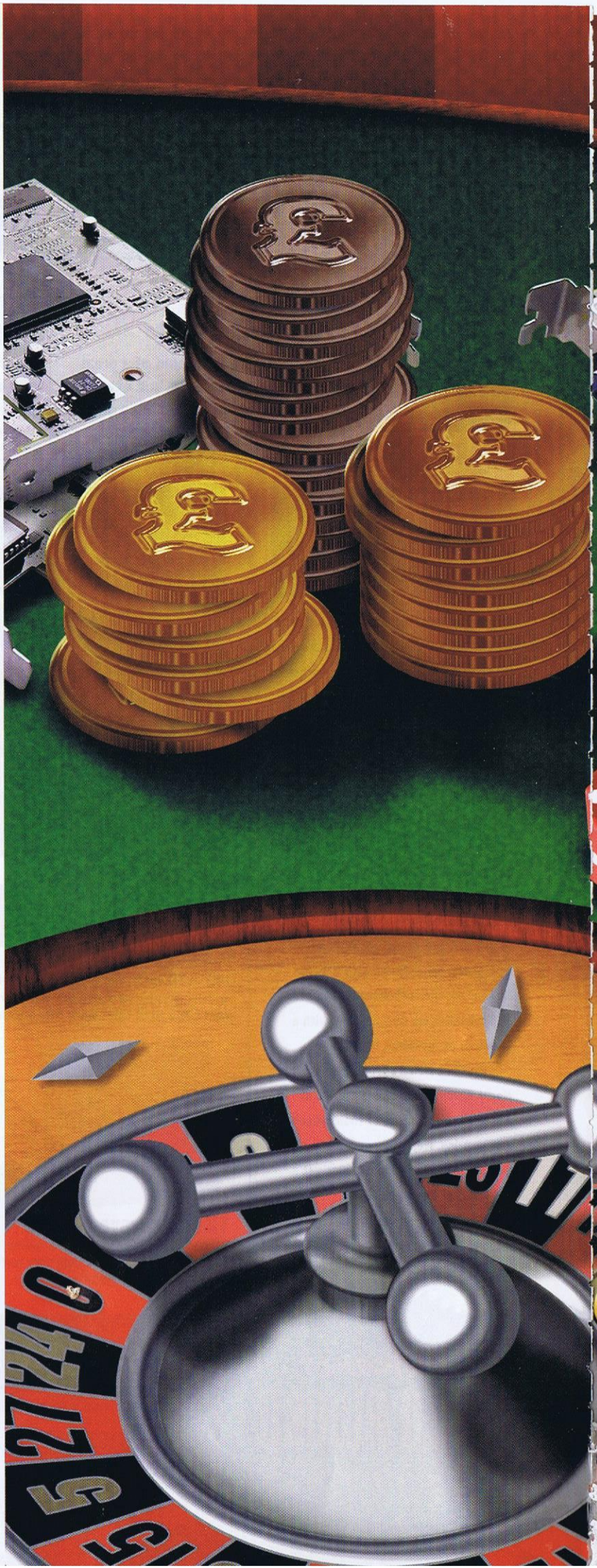
Reviewer spotlight

Colin Mitchell

You might think that wee Colin is but a callow minor, a smirking young offender with yellow hair and the glib bombast of a sixth-form rugby player. And you'd be right. But Colin also knows his hardware, especially if it plugs into a soundcard, so this month we gave him joysticks to test. Colin's love of OS2/Warp knows no bounds, poor laddie.

3D CARD BRAG

The 3D stakes are high and you don't want to gamble on a duff card. So pull up a seat next to **Ed Ricketts** and let him deal you a hand of 3D aces, with the jokers swiftly consigned to the spittoon under the table.



GET INTO AN ARGUMENT WITH YOUR CONSOLE-OWNING BUDDY OVER which of your machines is superior, and you can bet that sooner or later said chum will play his trump card. "Ah," he'll say, "but my PlayTendo 128 has much better graphics. Look at *this*, for instance." And at this point you can but sit and weep while he shows you some pathetic platform game chucking millions of carefully-shaded, immaculately-coloured pixels around the screen at well over 30 frames per second. Grrr.

It's true: until now, consoles have trounced the PC time and again when it comes to 3D graphics. No matter how fast your set-up or how beefy your Pentium, it simply cannot match the performance of a £130 console. Why? Because the consoles cheat. They have chips dedicated solely to calculating and displaying sophisticated 3D effects. Your PC has just one main CPU, which is expected to take care of not only running an entire game, but also to calculate, display and update a complicated 3D scene many times a second. No wonder it can't keep up.

PC FORMAT SUPER test

Now, though, the PC is fighting back, with a whole new slew of extremely powerful 3D accelerator cards coming onto the market. These exist for one reason only: to take care of all the repetitive, time-consuming number crunching involved in displaying and processing complex 3D scenes. Mundane tasks such as deciding where objects should be drawn and in which order, what colour they are, how they should be lit, where shadows appear and so on. By handing over this work to a dedicated chip, your main processor can get on with more useful things such as taking care of running the game itself. Result: faster games.

But that's not all. Because the chips on 3D accelerators are custom-built for one job only, they can do things that even the fastest Pentium Pro would stumble over. Thus we get visual gimmicks such as anti-aliasing, fogging, perspective correction and so on, while still keeping the display rate up to speeds like 30 frames per second for fluid, realistic motion.

Of course, it's not that easy. There are loads of them around, and they all promise wonderful things. Which is "best"? Does more money mean more power? And are there actually any games out there which use them? Does every single one of them come bundled with *MechWarrior 2*? It's a complicated business, and the situation has changed considerably since we last tested these cards back in our Christmas issue. Never fear: by the end of this Supertest, you'll be fully equipped with enough knowledge to buy a card that will make your consoled-up friend tremble with fear.

If the chips are down and the wheel of fortune refuses to spin your way, put your money on the cards. We know just which ones are worth a flutter, and you'll cash in big-time with better, faster games.

The 3D A-Z

All the cards here employ various tricks to make 3D scenes look more realistic and to speed processing.

Alpha blending
Pixels normally have a red, green and blue value, but they can have an alpha channel which specifies the transparency: the lower the alpha, the higher the transparency. This process combines two objects on-screen while taking alpha channels into account, so that objects underwater, say, would be tinted and slightly blurred.

Anti-aliasing
The process of "smoothing" the appearance of jagged lines at the edges of objects, by applying shades of colours to ease the transition of shades.

Bilinear/trilinear texture filtering
Bilinear calculates the value of a pixel by interpolating the values of four surrounding ones to remove the blocky look of curved or angled edges. Trilinear goes further and reduces the shimmering.

Fogging/depth cueing
A visual trick to reduce the detail that needs to be drawn and using hardware saves time. Depth cueing reduces an object's colour/intensity as it moves away from the viewpoint.

Gouraud shading
A popular method for shading polygons. Each point is assigned a hue, and a colour gradient is drawn on it.

MIP mapping
Uses multiple versions of each map, each at a different resolution. Objects closer to the viewpoint are assigned a high-resolution, high-detail texture, while those further away get a lower-resolution and lower-detail texture.

Perspective correction
A process that skews and rotates texture maps applied to an object so they match in angle and orientation.

Sub-pixel correction
Eliminates uneven lines, blocky circles and flickering dots caused by lines being "snapped" to the nearest pixel. The grid is divided into smaller sub-pixels in memory, enabling greater drawing precision.

Texture mapping
The process of applying a bitmap (or a video sequence) onto an surface to give it a more detail.

Z-buffering
Performs "hidden surface removal" – which is a way of drawing objects so that items that are behind others aren't shown.

APOCALYPSE 3DX

£147 VideoLogic ☎ 01923 260511

VIDEOLOGIC IS SOMETHING OF A QUIET sensation when it comes to fast, reliable cards, and the Apocalypse 3Dx is no exception. This is a very powerful card, but beware: it's a dedicated 3D accelerator rather than a complete card, so you still need a 2D card for it to work with. Cleverly, there's no need to connect it to your current card at all; you just plug it into a free slot and go.

This card is based on the PowerVR chipset and the included demos will have you gaping. They're simply incredible, showing fantastic MIP-mapped texturing, smooth light-sourcing, anti-aliasing – the works.

The games: *WipeOut 2097*, *ULTIM@TE RACE* and *Resident Evil* are a fantastic showcase for the 3Dx's power. And, you get *MechWarrior 2* too.

PowerVR-dedicated games are uncommon, but there are plenty in development, and if these are anything to go by, we're in for a treat.

***PC FORMAT* Rating 88%**

It might still be lacking in the support department, but give it time and the Apocalypse 3Dx really will knock your socks off, then fold them up and put them away.

GRAFIXSTAR 450

£69 VideoLogic ☎ 01923 260511

ANOTHER ALL-ONE-IN CARD (BASIC VGA plus 3D acceleration). Measured on its 3D acceleration alone, the 450 is something of a dud – but as a potential companion card to a dedicated 3D board, or as a general-purpose workhorse, it's fine.

It's based on the S3 ViRGE – not the GX, or even VX, just the ViRGE, the most basic S3 accelerator. Still this can handle the full range of 3D tricks, which is more than can be said for some of the other cards here. The Windows drivers are eminently stable and mature, and provide pleasing performance, as does native DOS support. The 3D acceleration is so minimal (by comparison), so you'll need a speedy PC to get the most from optimised Direct3D or ViRGE games.

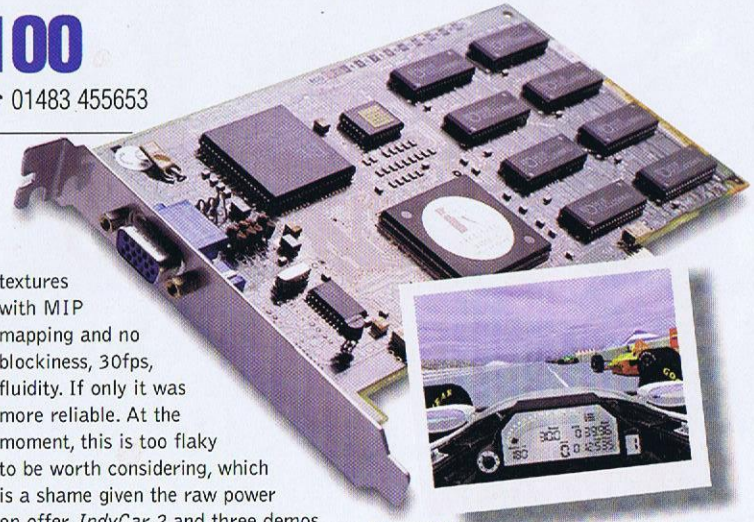
Although the box doesn't say so, you get one game (*Havoc*, bit cheesy) and two demos thrown in. It's not about to set the world on fire, but it's cheap and good at 2D.

***PC FORMAT* Rating 65%**

Great 2D, but the only way you're going to get really impressive 3D out of the GrafixStar is by plugging it into the fastest PC you can lay your hands on.

INTENSE 3D 100

£129.95 Intergraph/Nexr Technology ☎ 01483 455653



"UNLEASH A 3D GRAPHICS MELT-down," says the box. Well, yes, you probably could, if the drivers worked just half the time and if the card didn't keep crashing when you needed it most. Theoretically, the Intense 3D is a powerful beast, based on the Vérité V1000 chipset, but it's let down by awful Windows drivers and plagued by problems.

The drivers, still in beta, crash often in Windows (even switching to DOS) and give terrible 2D performance, in both. When you do get it working and play the special Verité version of *Quake*, you can see what you're missing. Enhanced, smooth textures with MIP mapping and no blockiness, 30fps, fluidity. If only it was more reliable. At the moment, this is too flaky to be worth considering, which is a shame given the raw power on offer. *IndyCar 2* and three demos are bundled.

***PC FORMAT* Rating 66%**

Hey man, this is, like, intense. Real white knuckle, seat-of-the-pants stuff. And that's just trying to get the drivers working. Otherwise it's workaday intensity.

MIROCRYSTAL VRX

£152 Miro ☎ 01494 510250

So brand-spanking new even miro doesn't list it on its Web site, the miroCrystal is another card based on the Vérité V1000 chipset, like the Intense 3D 100. Unlike that card, this one works when you install it.

The drivers and supplied utilities are solid enough and get you up and running with few problems. Only one game is supplied, but it's a goodie: the full version of *Tomb Raider*, optimised for the Verité, of course. This really shows off the VRX's power with 3D games, making full use of bilinear filtering, MIP mapping and all those other funky technical things (see boxout on page 108).

Once again non-native performance suffers at the hands of the Vérité, making Windows and any DOS game a pain rather than a pleasure to use. There's always a trade-off to be made with all-in-one accelerators, but it really shouldn't be as biased as this.

***PC FORMAT* Rating 76%**

All right, it makes Lara look lovely and it'll do a spanking job of *Quake*, but try anything more complicated with the miroCrystal and you're heading for trouble.

MONSTER 3D

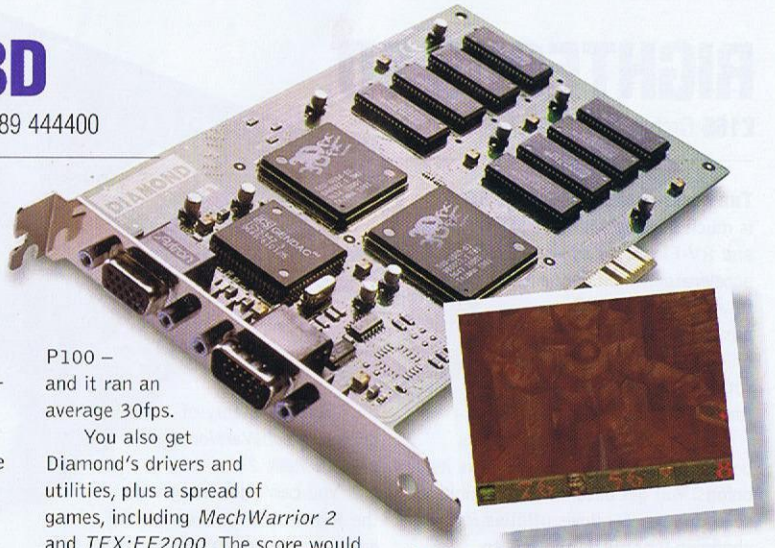
£220 Diamond Multimedia ☎ 01189 444400

Another 3D-only add-on card that works with your existing one, this time you connect the two using the supplied pass-through cable, which results in a less sharp picture. The Monster is based on the popular Voodoo Graphics chipset, probably the most widely-supported of the current rash of accelerators.

Play the Voodoo version of *Quake* and you get a feel for what the Monster 3D can do: MIP mapping, smooth, clean, high-res textures, SVGA resolutions, fluid animation – and all without batting an eyelid. We played *Tomb Raider* (640 by 480) with everything turned on, using a P100 – and it ran an average 30fps.

You also get Diamond's drivers and utilities, plus a spread of games, including *MechWarrior 2* and *TFX:EF2000*. The score would be higher, but for that steep price.

***PC FORMAT* Rating 86%**



Look, any Voodoo-based card is worth getting for *GLQuake* alone. Hey, and look at how bad Ed is at it! He was dead in a few seconds, you mark our words.

MYSTIQUE 220

£141(2Mb), £188 (4Mb) Matrox ☎ 01793 441110

An update to the very popular board. The "220" is because the Mystique has a 220MHz RAMDAC – it's faster. It comes with funky software drivers and utilities that work wonders with normal Windows and DOS performance. No games are bundled, although there's a coupon you can send off to get an alleged $300-worth.

While it can deal with texture-mapping, Gouraud shading and so on, the Mystique lacks many higher-end 3D facilities such as bilinear filtering, hardware fogging and MIP mapping. So unless you have a very fast PC, you won't get the maximum benefit with more demanding games – and they won't look half as good. Having said that, the Mystique is cheap, blazingly fast, well-supported and will serve you well as a general-purpose card. It's up to you: an extra lick of speed or adequate speed with fancier effects? If it's the former, the Mystique is a winner.

***PC FORMAT* Rating 82%**

MDK looks marvellous on a Mystique, but then *MDK* looks marvellous anyway. We'd point you in the direction of a real 3D card that comes with lots of fancy tricks as well.

Whizzy chips

Although there are more than 20 3D accelerators on the market, they're all based on just four or five different chipsets. The chipset is the heart of the board and provides the power. When designing a 3D card, a manufacturer buys a pre-built chipset (such as the Vérité V1000 from Rendition or the Voodoo Graphics from 3Dfx), puts it on a board, adds some memory, and makes a few tweaks. Most gadgets are built from off-the-peg chips, with maybe one or two custom components.

When considering an accelerator, it's important to know which chipset it uses, because this in turn usually determines the level of native support from 3D games. The more games support an accelerator in its native mode, the better performance you'll get from it. Uh? Well, it's like this...

When a developer writes a 3D game, he has two choices. He can either write it to work with one 3D chipset and use the specific features of that chip to enhance the game, or he can write it so that it works with any card without taking advantage of any one particular feature.

The first option is called a native mode game. The advantages are clear: the developer can put in all sorts of special effects supported by, say, the 3Dfx Voodoo Graphics and know that it will run well and look great on any card using that chip. But then the market for the game is limited to Voodoo owners only.

The second option is to write the game using a 3D programming library, such as Microsoft's *DirectX* or Argonaut's *BRender*. These are a set of routines that provide generic 3D effects which will work on any card and don't use specific features. This means that anyone can play the game – but no one benefits from the features provided by their card. In addition, while a 3D accelerator can speed up a game written in *DirectX* or whatever, it will never be as fast as a native mode game.

It pays to buy a board based on a chipset that the developers will use in native mode; it's guessing which one that's tricky. At the moment, 3Dfx's Voodoo Graphics is probably the most well-supported, followed by Rendition's Vérité V1000. There are also plenty of titles in development for NEC's PowerVR chip.

All the cards reviewed here can also accelerate games written with *DirectX, BRender, RenderWare* and most of other major 3D libraries. Sometimes games are released as *DirectX* initially, with patches and updates available later for specific cards by demand. *Tomb Raider* is a good example: it's a DOS game, but can be patched to use other chips.

Obligatory technical bit

Have you ever wondered how a 3D card actually works? Us too. We found out so we could share our knowledge with you... but we wish we hadn't. Here, for the very brave, is a potted account of how 3D images appear on a flat screen.

An object is first represented as a set of vertices in a 3D coordinate system (x, y, z axes) and stored in RAM as the object definition. This has to be rendered on screen. Rendering means to calculate on a per-pixel basis the different colour and positioning information which fools the viewer into perceiving depth on a 2D plane. Rendering fills in all the points on the surface of an object which previously existed only as a set of vertices.

The vertices of the object are segmented into triangles, a process called Triangularisation. They are then passed through the 3D "pipeline" for processing. First, a transformation stage does any translation (moving in space), rotation or zooming that is needed. Next, a clipping stage eliminates any portions of the triangles that fall outside the "window" which is the viewer's line of sight (the drawing area, in other words).

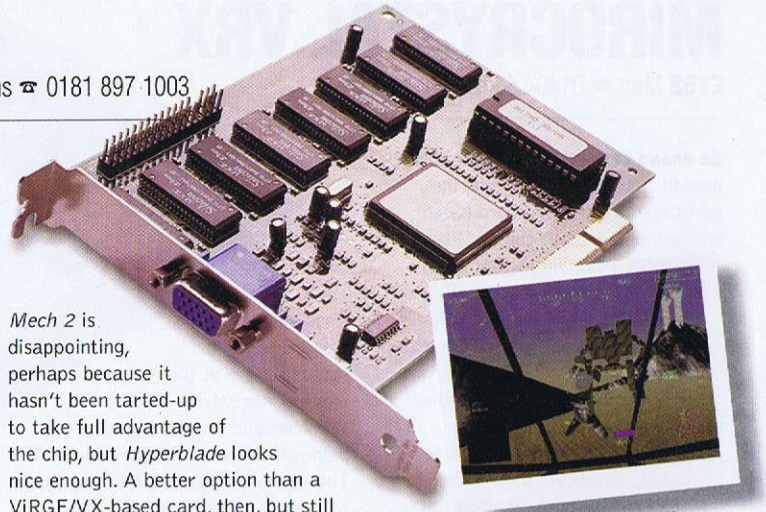
The lighting stage calculates different intensity values for the triangles' surface depending on where it is in the world, what lights are nearby, shadows, and so on. The triangularised, transformed and clipped object must then be mapped to the 2D screen, using perspective algorithms. Basically, these say that when an object is further away, it will seem smaller, and when it's closer it's larger.

Finally, the object is ready for rendering to the screen, which is the most time-consuming part of the whole operation. Previously, the hardware has been working only with vertices – sets of three numbers, so the maths is fast. Now, it has to work on a per-pixel basis to fill in all those pixels that make up the object's surface, depending on the previous steps. It's at this stage that Gouraud shading and texture mapping are applied. This is the real meat for a 3D accelerator: helping out with those tricky fog, light, transparency and other effects which could drastically slow down the screen update.

D'you follow? That's how you end up with a 3D object on screen. Remember, all this is happening many times a second in the background while you play the game. See? It's easy enough when you know how.

NITRO 3D

£92 (2Mb), £123 (4Mb) STB Systems ☎ 0181 897 1003



Another putative all-in-one. On-board is an S3 ViRGE/GX chip, the next step up from the ViRGE/VX. The GX is faster (it uses SGRAM) and adds a few features to the VX, which does seem to make a little difference with the Nitro 3D.

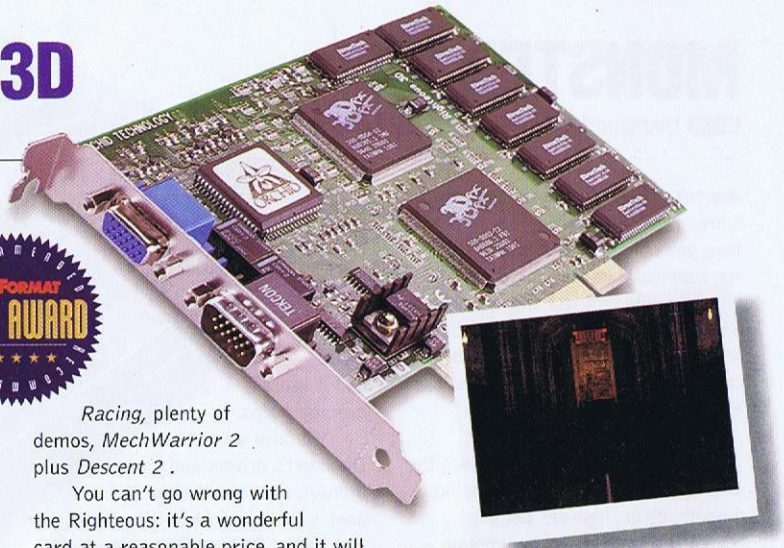
The card installs easily and is supplied with Windows drivers and utilities to control resolution and colour switching. Windows and DOS performance are excellent in general use. Once again though, optimised games are merely good, unless you have an enormously fast PC. Four games are bundled, including *Interstate '76* and *MechWarrior 2*... *Mech 2* is disappointing, perhaps because it hasn't been tarted-up to take full advantage of the chip, but *Hyperblade* looks nice enough. A better option than a ViRGE/VX-based card, then, but still poorly-supported.

***PC FORMAT* Rating 72%**

There's nothing like a brand new, cutting-edge, top-of-the-range game to show off your new 3D card's stunning capabilities. Like, er, *MechWarrior 2*. Right.

RIGHTEOUS 3D

£165 Orchid ☎ 01256 479898



The oddly-named Righteous 3D is much like the Monster 3D and RV-Flash: an add-on 3D accelerator which connects to your 2D card with a pass-thru cable. In fact, it's only the drivers and other software which differentiate these cards, so similar are they.

As with Diamond, Orchid has been around for yonks and knows its onions. You get detailed instructions, solid drivers, Windows utilities for changing what little there is to change, and best of all the amazing performance. A generous games bundle includes *Actua Soccer, Fatal Racing*, plenty of demos, *MechWarrior 2* plus *Descent 2*.

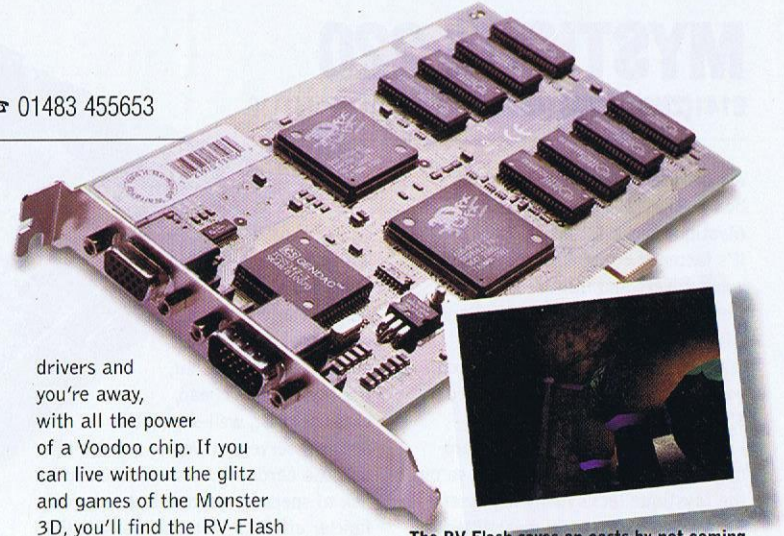
You can't go wrong with the Righteous: it's a wonderful card at a reasonable price, and it will knock your little cotton socks off.

***PC FORMAT* Rating 91%**

Hey, boys and girls, it's wonderful *GLQuake* again! Should Ed the *Quake* duffer head through that slipgate, or go back and find an easier one? We counsel caution.

RV-FLASH

£120 RealVision/Nexr Technology ☎ 01483 455653



Take a Monster 3D, take away the flash utilities and the games, simplify the packaging, reduce the price and what do you get? The RV-Flash 3D, of course. What we have here is a basic Voodoo-based 3D accelerator board, just like the Monster 3D. Instead of the copious documentation on disc, here you get a yellow, photocopied leaflet and a few demos, both of games and Voodoo technology. Apart from that they're virtually one and the same.

Connection works in the same way: plug in the card and connect it to your existing SVGA card with the pass-thru cable. Install the few drivers and you're away, with all the power of a Voodoo chip. If you can live without the glitz and games of the Monster 3D, you'll find the RV-Flash a real bargain.

***PC FORMAT* Rating 89%**

The RV-Flash saves on costs by not coming with any flashy bundled games, but you do get this pretty 3D demo. It saves Ed any further *GLQuake* embarrassment, too.

STEALTH 3D 3000

£189 (2Mb), £226 (4Mb) Diamond Multimedia ☎ 01189 444400

DIAMOND SEEMS TO HAVE MORE CARDS in its range than the competitors put together. The 3000 is similar to the 2000: based on the S3 ViRGE/VX chipset, but with the addition of VRAM and a 220MHz RAMDAC. What does this mean? It's faster.

Fast, that is, as ViRGE chips go, which isn't all that much. As usual with Diamond, copious drivers and Windows utilities are provided, and the card's performance in Windows and DOS is superb. Only one game (*Descent 2*) is included. This is a reasonable showcase for the ViRGE, although hardly awe-inspiring, but then the same can be said for most ViRGE games.

If you're after a decent all-in-one 2D/3D card, and aren't too bothered about having the very best acceleration and features for 3D games, the Stealth 3D 3000 is a good bet. It's not up there with the Voodoo Graphics, but it's solid and reliable.

***PC FORMAT* Rating 69%**

There's PowerVR and Voodoo, then there's Rendition, and then comes everything else. The S3 ViRGE/VX, as found in the Stealth, is one of the everything else brigade.

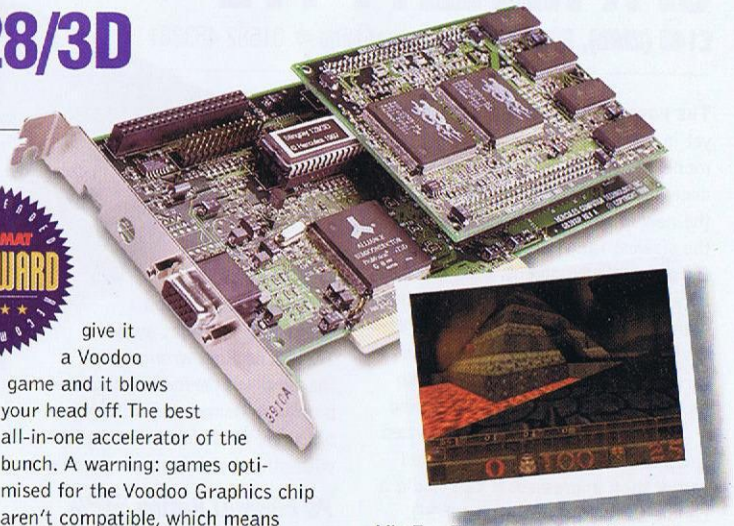
STINGRAY 128/3D

£217 Imago Micro ☎ 01635 294300

GERMANY COMPANY HERCULES HAS produced a blisteringly fast all-in-one accelerator incorporating not just a Voodoo Rush chipset, but also the 128-bit SVGA Alliance AT3D SVGA accelerator.

The Voodoo Rush is the next step up from the Voodoo Graphics chip. Rush can render in a window, and has the capability to connect to a VGA accelerator on the same board. There's 6Mb memory; 4Mb display memory for the VGA part, and 2Mb dedicated to texture memory for the Voodoo. The Stingray is quick in DOS and Windows, and give it a Voodoo game and it blows your head off. The best all-in-one accelerator of the bunch. A warning: games optimised for the Voodoo Graphics chip aren't compatible, which means support is thin at the moment.

***PC FORMAT* Rating 90%**



Like Troy Tempest's sub, the Stingray is damned impressive. Unlike Ed's *GLQuake*-playing. Look, he's found a secret level. He probably typed MAP E1M8 at the console.

3D BLASTER PCI

£199 Creative Labs ☎ 01245 265265

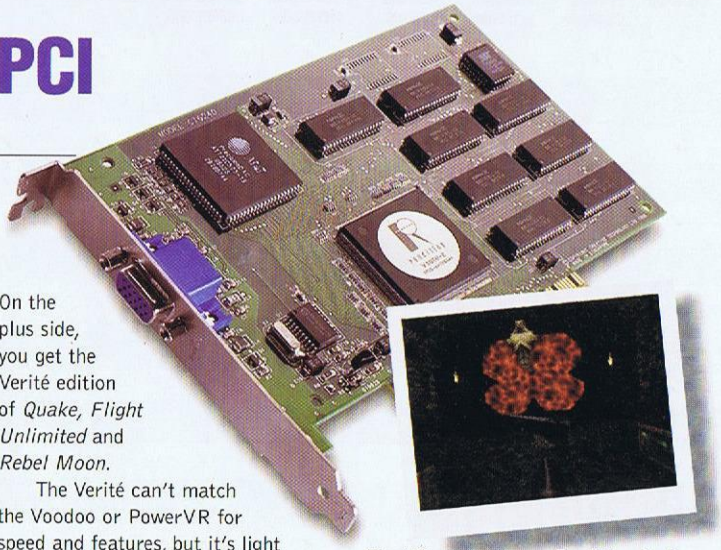
CREATIVE'S FIRST ATTEMPT AT THE 3D Blaster, the VESA local bus version which virtually kick-started the wave of 3D accelerators, was a dismal affair. But that was based on a long-gone chip – the PCI version is a far superior board.

It's based on the Vérité V1000, which means two things: a) amazing graphics at ridiculous speeds, and b) poor DOS/Windows performance. Sure enough, that's just what you get from the 3D Blaster. Creative supplies its usual fine Windows drivers and utilities to help you tweak the card, but they can't compensate for the in-built deficiencies of the Verité in 2D.

On the plus side, you get the Verité edition of *Quake, Flight Unlimited* and *Rebel Moon*.

The Verité can't match the Voodoo or PowerVR for speed and features, but it's light years ahead of the ViRGE *et al.*

***PC FORMAT* Rating 78%**



The difference between Rendition *Quake* and *GLQuake* demonstrates the difference between the two chipsets quite well. We're tired of joking about Ed's *Quake*-play.

Do you stand alone?

Generally speaking, 3D graphics accelerator cards come in two basic flavours: the all-in-one or the stand-alone. All-in-one 3D cards contain not only the hardware for processing 3D scenes, they can also display and accelerate 2D functions, such as DOS and Windows programs. In other words, they're normal graphics cards with 3D acceleration facilities added.

Stand-alone accelerators are slightly less versatile. They're designed to work in conjunction with an existing graphics card and aren't capable of being used for normal tasks such as word processing. Put one of these in a PC on its own and it just won't work. It lies dormant until you fire up a 3D game that it's designed to handle, then it steps in and takes over control from your usual card. When the game's finished, it hands back the reins and goes to sleep again.

So which is your best bet, then? Well, it's not quite that simple (as usual). Because an all-in-one card is expected to do everything, you'll find that it tends to suffer in some area – and that's usually the area of 2D acceleration. Many all-in-ones show a slower performance in DOS and Windows than equivalently-priced 2D-only cards, even though they might be very good at 3D.

This is because it's not really possible to produce a cost-effective card that's equally good at both 2D and 3D functions. Stand-alone cards tend to have the edge when it comes to speed and features, but then of course you need to have a decent "workhorse" card to begin with, which probably costs just as much as the stand-alone itself.

Really, it all depends on your current set-up. If you're quite happy with your existing 2D card (and it's quite hard to find a bad one these days), but just want to play fab 3D games with excellent effects, go for a stand-alone. Replacing a fast 2D card with a mediocre all-in-one, and thus downgrading your DOS and Windows performance just to get 3D acceleration, doesn't seem like a very sensible option.

However, if you're stuck with an older graphics card you've had for a while and don't really want to spend all that dosh buying two new cards, an all-in-one is for you. You'll be surprised how much 2D performance has increased over the past couple of years and the 3D is often better than you might expect, even compared to a dedicated 3D card, so you're better off on both counts.

Editor's choice

To return to the original question, then, which card is "best"? Well, there's no single card that will satisfy everyone. However, there are definite winners in each category, depending on your current set-up and budget.

Without a doubt, the best all-in-one card in the group is the Stingray 128/3D. Not only does it use the Voodoo Rush chipset for incredible 3D effects, it gives amazing performance in general use. The drivers are solid and the utilities useful.

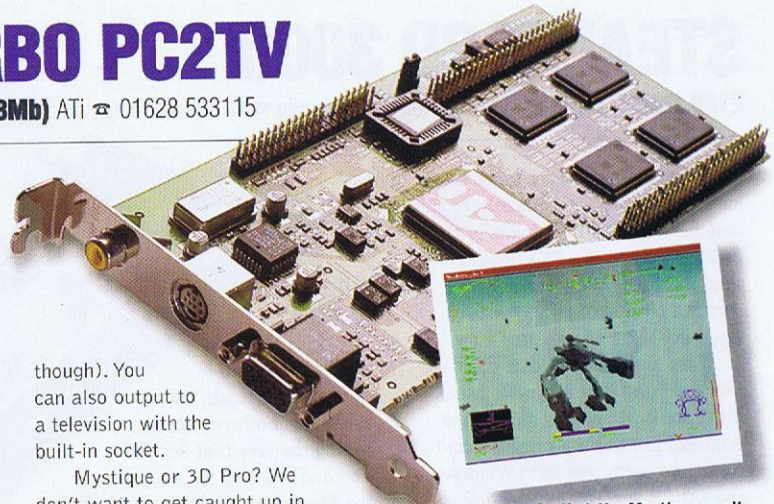
When it comes to stand-alone accelerators, there's more of a choice. Our award here has to go to both the Righteous 3D and RV-Flash; they're fabulous cards which will serve you well, again using the Voodoo Graphics chipset. The Monster 3D is equally great, but it's more pricey because of the games. So choose whether you want to pay a little more for the Righteous 3D and Monster 3D and get the software, or go for the RV-Flash.

Coming a close second is the Apocalypse 3DFX. It has amazing potential, but the game support isn't as widespread as the Voodoo, and it requires a nippy PC.

Anything could happen in the next half hour! Stingray – 3D and 2D in harmony.

3D PRO TURBO PC2TV

£108 (2Mb), £124 (4Mb) £182 (8Mb) ATi ☎ 01628 533115



SOMEWHAT AMUSINGLY, ATI AND Matrox appear to have an on-going war on the Web, each accusing the other of misinterpreting various test results and claims. It's not hard to see why: the two cards are similar.

The 3D Pro is another fine contender for best all-in-one card, boasting superb Windows drivers and utilities with fast performance in DOS too. Even though both cards use proprietary chips (3D RAGE 2 here), the ATi card isn't as well supported at the moment. However, it includes support for bi/trilinear texturing and alpha blending (no MIP mapping though). You can also output to a television with the built-in socket.

Mystique or 3D Pro? We don't want to get caught up in that war, so they get the same. Hah.

***PC FORMAT* Rating 82%**

It does a few tricks that the Mystique can't manage, but it won't sell as many because it's less of a mouthful to ask for a Mystique than for a 3D Pro Turbo PC2TV.

9FX REALITY 772

£145 (2Mb), £205 (4Mb) Number Nine ☎ 01582 483381

THE POOR 9FX LOOKS AND FEELS OLD, yet in reality it's a relatively new model. At its heart is a potentially decent chipset: the S3 ViRGE/VX. Of the new breed, the ViRGE is probably the slowest range and the least used for games development. Still, the card is reliable enough, installing first time with no problems. It comes with integrated Windows utilities for altering screen refresh rates, colours and so on, though this too looks a bit dated.

Gameplay with Reality-enhanced titles is likely to leave you satisfied rather than impressed; it can't hold a candle to the likes of Monster 3D. Worse, there aren't any games supplied at all, so you can't judge straight away. There's nothing wrong with the card – it performs adequately both with games and in Windows – but there's not much reason to buy it with other better versions available.

***PC FORMAT* Rating 56%**

There's no way these tiny snapshots can do justice to the accelerator cards. That's why you'll find all the images on the coverdisc in the directory called supertst.

3D FIGURES HOW DO THE CARDS SHAPE UP?

NAME	CHIPSET	MEMORY OPTIONS	GOURAUD	TEXTURE SHADING	BILINEAR MAPPING	TRILINEAR FILTERING	PERSPECTIVE FILTERING	MIP MAPPING CORRECTION	Z-BUFFERING	ALPHA	FOGGING/ BLENDING	SUB-PIXEL DEPTH CUEING	ANTI-ALIASING CORRECTION RATING
3D BLASTER PCI	Rendition Vérité V1000	4MbDRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3D PRO TURBO PC2TV	ATi 3D Rage 2	4/6/8Mb VRAM	✓	✓	✗	✗	✓	✗	✓	✓	✗	✗	✗
APOCALYPSE 3DX	NEC/VideoLogic PowerVR PCX2	4Mb SDRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GRAFIXSTAR 450	S3 ViRGE	2/4Mb DRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗
INTENSE 3D 100	Rendition Vérité V1000	4Mb DRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MIROCRYSTAL VRX	Rendition Vérité V1000	4Mb DRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MONSTER 3D	Dfx Voodoo Graphics	4Mb DRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MYSTIQUE 220	Matrox MGA-1164SG	4/8Mb SGRAM	✓	✓	✗	✗	✓	✗	✓	✗	Depth Cueing only	✗	✗
NITRO 3D	S3 ViRGE/GX	2/4Mb SDRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗
RIGHTEOUS 3D	Dfx Voodoo Graphics	4Mb DRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RV-FLASH	3Dfx Voodoo Graphics	4Mb DRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
STEALTH 3D 3000	S3 ViRGE/VX	2/4Mb VRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
STINGRAY 128/3D	Alliance AT3D& 3Dfx Voodoo Rush	6Mb DRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9FX REALITY 772	S3 ViRGE/VX	2/4Mb VRAM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗

NOTE: Functions listed are those supported by the individual card's hardware, rather than software drivers.

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PC Guide, Feb. '97

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The Guardian, Feb. '97.

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share

System Requirements

- 486DX4 100Mhz (Pentium® recommended)
- Windows® 95
- 8MB RAM (16MB recommended)
- 40MB of available hard disk space
- SVGA(640x480) monitor with 256 colours (800x600 16-bit colour recommended)
- Microsoft Windows compatible mouse
- CD-ROM drive
- Sound card Optional

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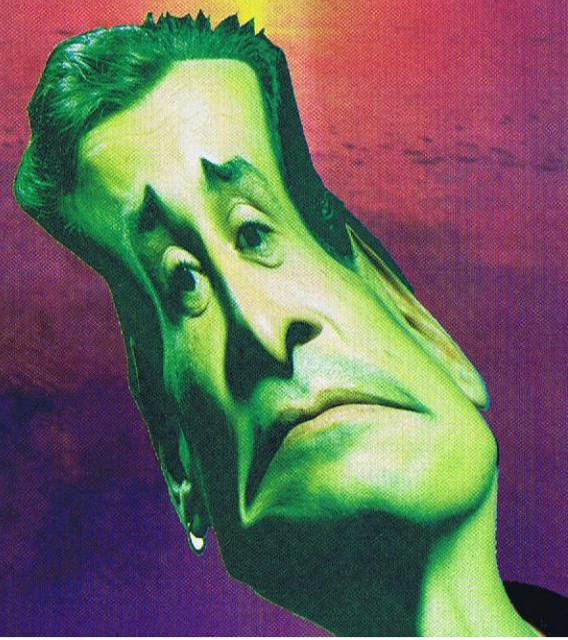
MacFormat, April '97.



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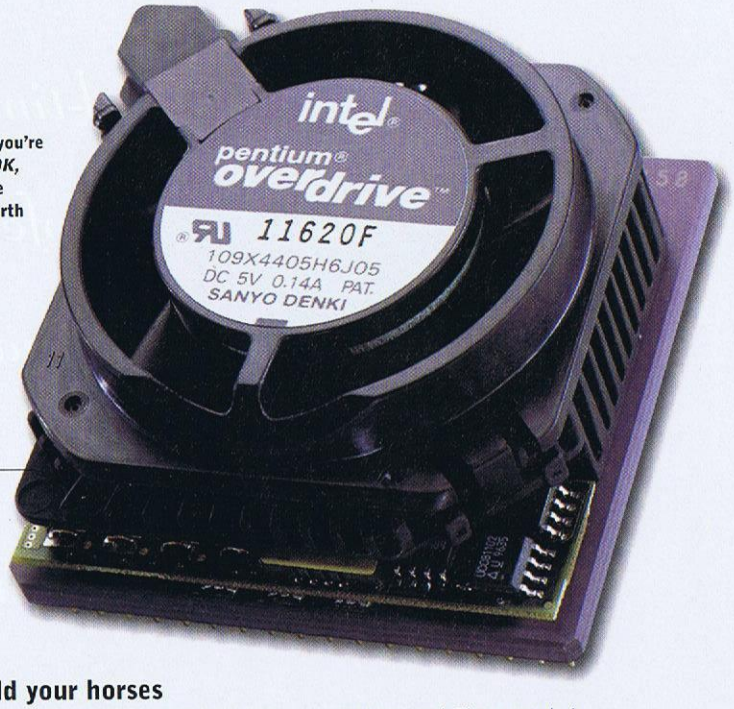
MMX OVERDRIVE

£316 (P166) Intel ☎ 01793 431155



It isn't cheap – but if you're struggling to push *MDK*, Intel's MMX OverDrive processor could be worth every penny.

Is your Pentium an aging turkey? Give it an MMX Overdrive brain transplant, and it'll soon be like a spring chicken once more.

IF YOU WERE ONE OF THE FIRST PEOPLE to give a Pentium pride of place on your desktop, you've probably been kicking yourself ever since. Within weeks of the P75 and the P90 being launched onto the market, the P100 muscled in and set the standard for fifth generation CPUs. Minimum systems have rocketed to new heights of insanity – unless you're running a P100, the door to many of today's gaming greats is locked. We know this is sickening, but if you want top-notch games and graphics on your PC, you must have the hardware to handle it.

This MMX OverDrive replaces the version previously available. The MMX has doubled the internal cache to 32K and added 57 instructions in order to accelerate parallel operations. It's designed to work wonders with multimedia apps and it was seen as 'the big thing' as 1997 dawned.

Yes, MMX does mark some notable improvement in performance: under Landmark benchmark tests, the MMX OverDrive lived up to its billing by giving a 10-percent improvement over the standard P150 overdrive.

Hold your horses

However, if your PC's relatively up-to-date, then it isn't worth upgrading for this new technology alone. Don't replace your existing P125 or P150 processor with its MMX counterpart – the P2 processors are already out of the starting gate.

If, on the other hand, you're crawling along – an OverDrive processor is a useful ride out of the services (and if it comes with MMX, so much the better). P75 and P90 PCs turn into P125s and P150s respectively, and can lift their heads in the crowd. The upgrade is one of the easiest you can make. For the fee, you can expect to run the latest software for another year.

MMX OVERDRIVE

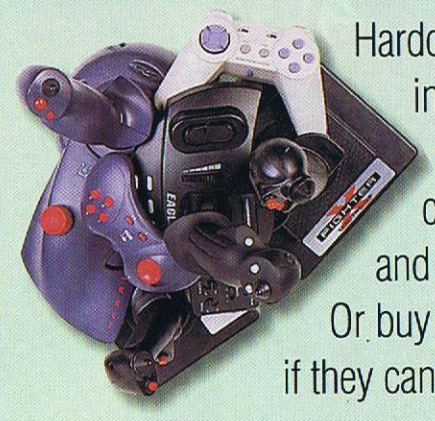
Minimum system: P75

- ✓ Easy installation
- ✓ Tempting if you own a P75/P90
- ✗ It's certainly not cheap
- ✗ P166: minimum standard soon?

***PC FORMAT* Rating 80%**

CONTROLLERS The most joyous sticks grapple with the gamest pads

ALL FINGERS AND THUMBS

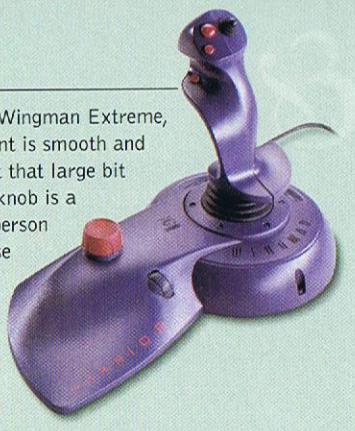


Hardcore gamers insert themselves into VR mind-control booths, and play *Pacman*. Or buy a good joystick, if they can't afford that.

THERE ARE A HUGE VARIETY OF GAME CONTROL METHODS OUT THERE, FROM £10 joypads to £200 flight yokes. But you're probably looking for a mid-price stick that handles virtually any game you throw at it. The only exception is the arcade game, because most of these sticks have too much movement to allow for lightning reactions. And that's where the joypad comes in, because quick access to all the buttons, plus speedy direction changes are dead simple with a good one. We look at the latest challengers in both markets.

WINGMAN WARRIOR

£69.99 Logitech ☎ 0181 308 6582



The Wingman Warrior is an evolution of the Wingman Extreme, and, as a joystick, is impressive. The movement is smooth and decidedly sturdy. You may be wondering what that large bit of plastic stuck on the base is. Well, the red knob is a single axis mouse designed for playing first-person 3D games. That's clever and all, but if you use the joystick to play *Quake*, you lose. This is a powerful joystick, but you're wiser to go for the Wingman Extreme – the same piece, but without the knob or price.

***PC FORMAT* Rating 77%**

X-FIGHTER

£44.99 Thrustmaster ☎ 0118 978 7087

This stick looks like the Top Gun stick, except it's about a third bigger. Although the buttons and the curves are in the same places, the X-Fighter proves to be the father of the faster, fitter, and generally better Top Gun.

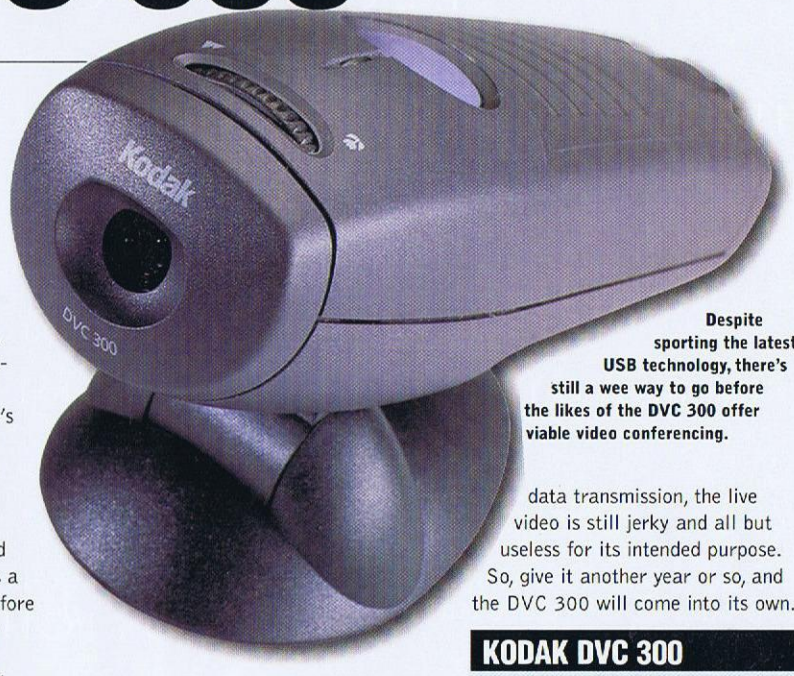
This stick's large size is suitable if you have paddle-shaped hands and it's so stiff it requires a enormous amount of exertion to change direction. Stay with the Top Gun, unless you're a giant-handed superhuman.

***PC FORMAT* Rating 71%**

KODAK DVC 300

£159 Kodak ☎ 01442 61122

You're desperate to video conference with all your friends. Aren't you? Well, you will be soon. So, in readiness...



Despite sporting the latest USB technology, there's still a wee way to go before the likes of the DVC 300 offer viable video conferencing.

VIDEO CONFERENCING HAS BEEN HYPED as the big thing to look out for this year. But the reality is that the technology is ahead of its time and engaging in meaningful eye-to-eye contact with people via your PC (whether over the Net or a local network) is something of a joke. The problems are twofold: video quality is relatively poor and data flow isn't fast enough. The net effect is also reminiscent of early satellite links, when audio and visual never quite managed to work in synch.

The DVC 300 is Kodak's way of dipping its toes into the luke warm waters of tomorrow's technology. There's no doubt that before long, video conferencing will be plausible. When that time comes, equipment such as this will be standard on many PCs. The DVC 300 is only available with a high-speed Universal Serial Bus connector. PCs that support such technology have only been available for three or four months, and there's a lot of upgrading to be done before they make the standard.

Running hoops

The DVC 300 is a well-designed piece of hardware which boasts a resolution of 640 by 480, therefore competing with digital cameras that cost three times the price. USB makes mincemeat out of the installation procedure and gives new meaning to the expression 'plug and play' – you can plug it in while you run Windows, and the drivers are set up within seconds.

Once up and running, it falls at the third fence, and the conferencing brings results no better than those expected. Despite the increased performance of USB in terms of data transmission, the live video is still jerky and all but useless for its intended purpose. So, give it another year or so, and the DVC 300 will come into its own.

KODAK DVC 300

Minimum system: Windows 95; USB

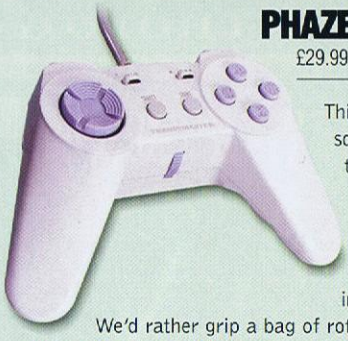
✓ Attractive price

✗ Video conferencing is inferior

***PC FORMAT* Rating 78%**

PHAZER PAD

£29.99 Thrustmaster ☎ 0118 978 7087



This expensive pad features a imprecise, squishy direction pad, four naff fire buttons, two ridiculous trigger shoulder buttons and a throttle wheel – just where you can't reach it. The fire of our irritation was stoked by the shape of the pad. It's bigger than the PlayStation pad it imitates, with out-sized palmrest prongs. We'd rather grip a bag of rotting potatoes than hold on to this. The Phazer Pad is possibly the worst joypad we've ever used.

***PC FORMAT* Rating 9%**

TOP GUN

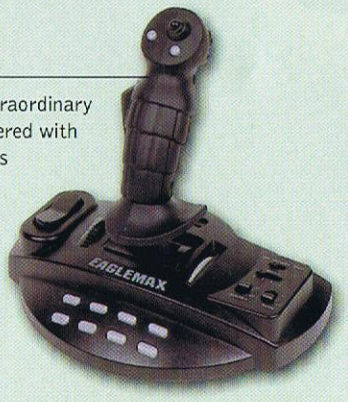
£34.99 Thrustmaster ☎ 0118 978 7087

The Top Gun looks like the X-Fighter, only smaller. This makes the stick more comfortable than its larger father. The Top Gun also has a superior feel – the stick moves around easily, with a resistance all round. There's nowhere near as much movement as there is with a CH stick, but it's more than enough for flight sims. It's a sound choice for other genres, too: it features four buttons, plus a coolie hat. The buttons don't feel substantial, but they're comfortable.

***PC FORMAT* Rating 85%**

EAGLEMAX

£80 ACT Laboratory ☎ 001 604 278 3650



The handle is moulded to look like an extraordinary totem pole, while the sturdy base is plastered with thousands of buttons and dials. It features four on-stick buttons, a coolie hat, a throttle wheel, autofire, programmable buttons and even macros. The movement of the stick is clunky and while the buttons are small, they do the job. But, there's the cost: £80 is roughly twice as much as it's actually worth.

***PC FORMAT* Rating 49%**

THUNDERPAD

£24.99 Logitech ☎ 01306 734300

Decked out in purple, with four fire buttons, two shoulder buttons and a comfortable-looking direction pad – this appears to have everything, even if it's light on buttons. Unfortunately, it doesn't provide enough palm support and isn't sturdy. The direction pad doesn't have a lot of play, which makes control difficult. The fire buttons are also on the small side. However, this is a decent pad, but not as good as the Gravis Gamepad Pro.

***PC FORMAT* Rating 70%**

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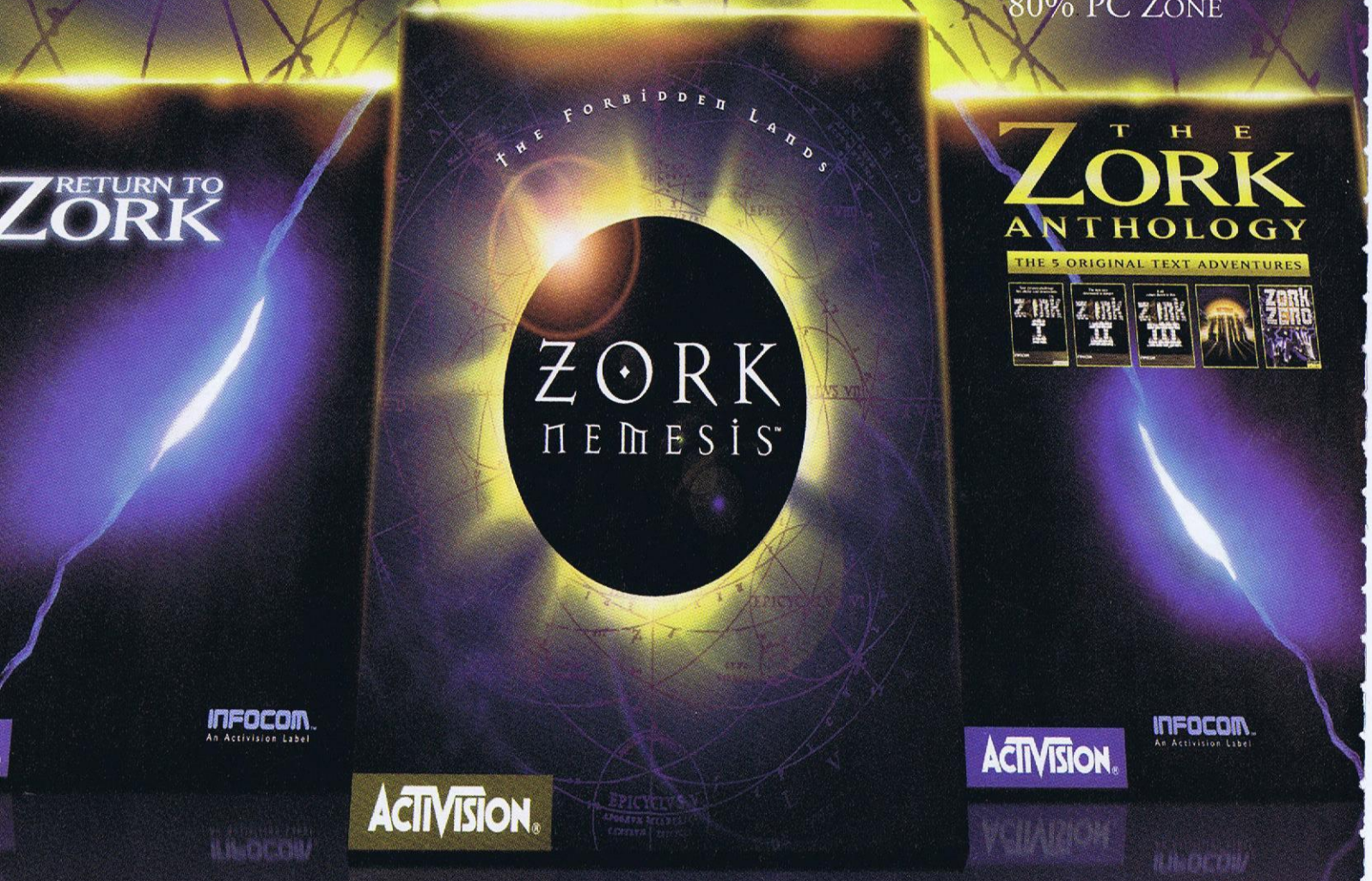
OVER THREE MILLION EXPLORERS AND TREASURE-HUNTERS HAVE ENTERED THE GREAT UNDERGROUND EMPIRE OF ZORK, MAKING IT THE BEST-SELLING AND MOST INFLUENTIAL ADVENTURE GAME SERIES OF ALL TIME.

NOW THE ZORK LEGACY COLLECTION DARES YOU TO EXPLORE THE GREAT UNDERGROUND EMPIRE.

"A HIGHLY IMAGINATIVE AND ENJOYABLE ADVENTURE GAME"
90% PC ZONE

"SUPERB."
90% PC HOME

"OFFERS A VERY DIFFERENT EXPERIENCE...INTERESTING AND GOOD VALUE"
80% PC ZONE



S-DOS /WINDOWS® 95 (RETURN TO ZORK: MS-DOS ONLY) CD-ROM

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ACTIVISION

The gigantic subwoofer rumbles like a fat *restaurateur* with indigestion

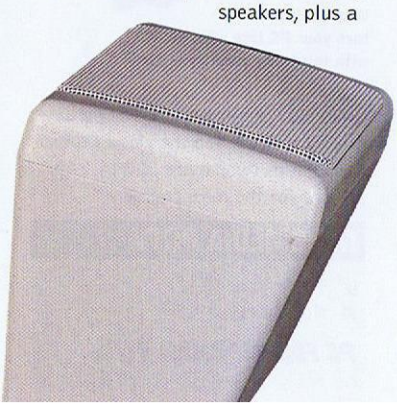
Listen up - the Home Theatre System delivers the most stunningly realistic sounds, which oscillate from under your desk, vibrate their way up your legs, and explode inside your trousers. Phew!

MTS-100 HOME THEATRE SYSTEM

£199.99 GB Consultancy ☎ 01869 233200

Having spent an entire day behind a behemoth speaker system to rival U2's PopMart set-up, **Colin Mitchell** can no longer hear a darn thing. Unfortunately for us, this causes him to babble even louder than usual.

WELCOME TO THE WORLD OF PC speakers gone crazy, where two blasters and a subwoofer just aren't enough to create aural satisfaction. The MTS-100 Home Theatre System provides five weighty speakers, plus a positively huge subwoofer, designed to supply Dolby Pro-Logic surround-sound to your desktop.



Now, stereo is a wondrous thing – but it only produces sound from the left, right, and directly in front of you (left and right combined). However, the MTS-100's five speakers provide sound from the left, right, centre, and sort of behind you – which results in a superior ear-orientated experience. The gigantic subwoofer rumbles like a fat *restaurateur* with indigestion - adding punch to gunshots, and forcing thumping techno sound-a-thons to vibrate inside your cerebral cortex.

Turn the MTS-100 up for a game of *Privateer 2*, and you're blown right away – especially if you've been using a £20 set of speakers until now. Not only is the sound loud and clear, but it comes from all around you. Very few games are designed to take full advantage of the wonder of surround-sound technology, but all benefit from the multi-directional set-up, which swamps you in a tidal wave of sound.

Auditory story

However, if you turn the subwoofer right down, you find that all is not as rosy as it seems, because the sound from the satellite speakers is missing mid-range clout and treble crispness. But these aren't major problems. Most games make little use of mid-range sounds, because it's usually treble-tastic laser blasts and bassy rumbles all the way – and the subwoofer covers up the mid-range deficiency with a tight, well-rounded bass sound. It may be about twice the size of the average subwoofer – but when it sounds this heavenly, you make room under your desk (even if you have to saw your feet off).

The Dolby Pro-Logic surround-sound works well, but you need a fair amount of space around your PC for all those speakers. But, all things considered, the major criticism of the MTS-100 is its price. £200 is a lot to pay for neighbour-worrying sound from your PC, especially when you can buy two top quality speakers and the best woofer in the business (the Yamaha?) for £30 less – or a low-end Hi-Fi amp and speakers for a few tenners more.

But, despite the superior sound quality, neither of these options truly provides surround-sound experience. So, if you want the greatest all-round sound experience your PC is able to offer, the MTS-100 is your best bet. This is an ideal add-on if you already possess everything else available to improve your PC's performance. PCF

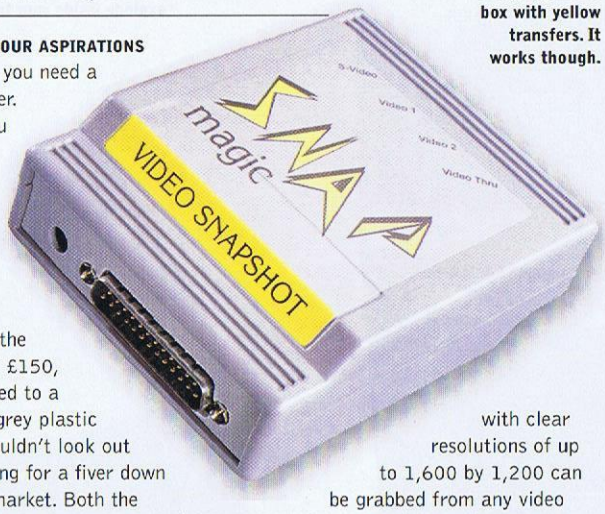
MTS-100 HOME THEATRE

- ✓ Dolby Pro-Logic works
- ✓ Big, brash and noisy
- ✓ An effective subwoofer
- ✗ Rather expensive
- ✗ Sound quality isn't perfect

***PC FORMAT* Rating 80%**

SNAPMAGIC

£149 Quantum Leap Software ☎ 01506 461917



All the panache of a grey plastic box with yellow transfers. It works though.

IF YOU HARBOUR ASPIRATIONS to edit film, you need a video grabber. Whether you want one that is quite as poorly conceived as this is another matter. For the best part of £150, you're treated to a yellow and grey plastic box that wouldn't look out of place going for a fiver down your local market. Both the romance of the silver screen and the sleek design of modern technology have passed the design team by. To make matters worse, a little close inspection resulted in the whole unit literally falling apart in our hands.

If quality and aesthetics are of little concern to you, the SnapMagic performs its role in life satisfactorily. The unit plugs into a parallel port, so installation is easy. Colour images with clear resolutions of up to 1,600 by 1,200 can be grabbed from any video source at 1/50th second. It accepts one SVHS and two standard PAL composite inputs, and also includes basic image editing software.

SNAPMAGIC

✓ It grabs video
✗ Cheap and nasty

***PC FORMAT* Rating 50%**

MULTIMEDIA MAGIC

£34.95 memsolve ☎ 0345 413654

Hmmm... it's an off-white remote control that talks to your PC...

WE LIVE IN SLOTHFUL TIMES, AND IF you're one of the millions of sofa spuds who keep pizza take-away firms in money, you may fall in love with this contraption... assuming you get off your behind and discover the joys of PC hardware in the first place. Multimedia Magic is a remote control unit that (surprise, surprise) can be used to control all your multimedia devices. An infra-red receiver plugs into your serial port, and then rests calmly on top of your PC, awaiting commands from the couch. The software automatically detects all the applications on your system that can be used with the 37-function remote control.

The idea is that you can change tracks on your CD player; play video, and even use your voice modem in order to receive calls... and all without ever having to move. Sad but true. The only reason you should want one is if you've fitted a TV card – in this all-too-busy day and age, you shouldn't have to get up to change the channels.

MULTIMEDIA MAGIC

✓ Lie on your back all day
✗ Get fat and suffer in later life

***PC FORMAT* Rating 70%**

TELEPHOTO AND WIDE-ANGLE CONVERSION KIT

£75 Kerridge ☎ 0117 9717301

You can photograph objects as close as just 2.5 inches away, which comes in jolly handy for those 'topless ant' shots.

YOU DON'T HAVE TO BE A genius to work out that lenses and filters only work as well as the cameras they're attached to. The Tiffen range of lenses *(PCF 70)* accommodate a healthy list; but in comparison, the Raynox offerings only work with the QV-10 series from Casio – not the most inspired choice of hardware.

If you already own a Casio, you know that they perform their roles with aplomb. The Casio doesn't have a threaded lens, so you need to screw it into an adaptor, and hook this over the camera. The end result doesn't look or feel particularly solid, but works well. This pack contains two lenses, which makes it extremely good value for money. The first is a 0.65-speed wide angle lens (which gives you approximately a third more in your scene), which can be used in conjunction with Casio's Macro mode to capture objects as close as 2.5-inches. For those distant objects, you get a 1.5-speed telephoto lens, which is merely passable.

Kerridge supplies a MacroScan Close-Up Lens (£58), which gives superb results when used with your digital camera's macro facility.

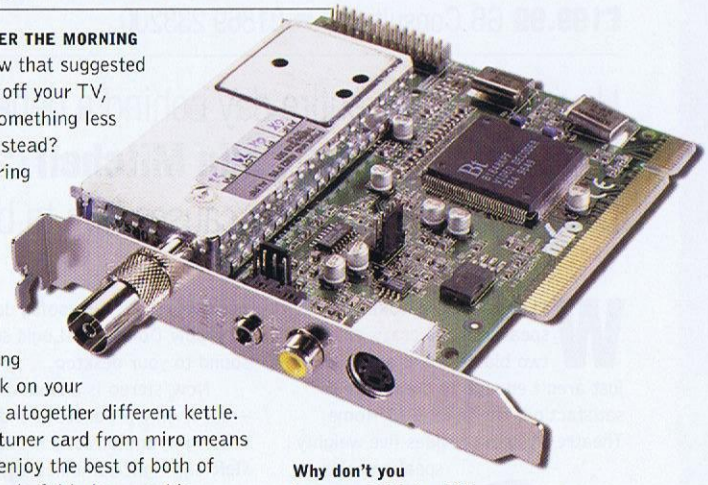
CONVERSION KIT

✓ Good value for money
✗ Hardware choice isn't great

***PC FORMAT* Rating 82%**

MIROMEDIA PCTV

£92.50 miro ☎ 01494 510250



Why don't you turn your PC into a TV with this tuner card from miro?

REMEMBER THE MORNING kids' show that suggested you turn off your TV, and do something less boring instead? Well tearing yourself away from the TV is one thing, but turning your back on your PC is an altogether different kettle. This TV tuner card from miro means you can enjoy the best of both of these wonderful indoor worlds.

The miromedia PCTV is a PCI card, so its installation is relatively straightforward. This is a lot more than can be said for actually using the blighter, because the software accompanying it (which is supposedly 'finished'), frankly isn't up to the job. The idea is that the miro manager integrates all of your multimedia components, to make your life that little bit easier. However, the reality is a different matter. But with a little perseverance, all the features to hand prove themselves worthy. The picture quality is good, and the video capture capabilities (which are 320 by 240) are par for the miro course.

MIROMEDIA PCTV

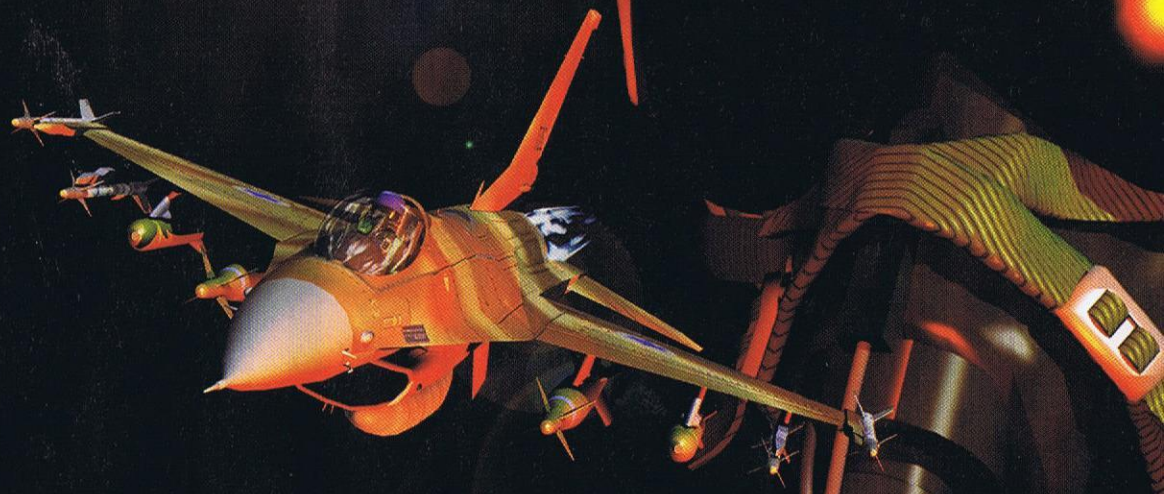
✓ TV on your PC
✗ No teletext

***PC FORMAT* Rating 70%**

"Accurate modelling, coupled with excellent gameplay. The best of both worlds."

91%

F-16 FIGHTING FALCON



NO GUTS, NO GLORY

No pilot will ever want to eject!

PC CD ROM

©1997 Digital Integration Ltd. Watchmoor Trade Centre, Watchmoor Road, Camberley, Surrey, GU15 3AJ.

Sick of the sight of your ugly beige box? Put one of these new wave models in the frame – they look like modern masterpieces and they perform every bit as well.

NEW MASTERS

You can now buy a leading-edge PC without Intel inside and thereby save money. **Steve Patient** checks out three brand new processors.

WHATEVER YOU SAY, YOU know the best PC is the one with the very latest, fastest Intel processor inside. No more. Intel is falling off the pace, and others are looking to change the basic nature of the PC.

The Intel 80x86 processor architecture has reached the end of its life. To work faster it has to be dragged kicking and screaming into the early 1980s. At their heart, the latest round of PC processors now conceal RISC chips – Reduced Instruction Set Computing.

RISC is attractive for processor manufacturers. It enables them to make simpler processors, executing a few small fast instructions that run like a cheetah full to the brim on vitamins. Historically, until the Pentium Pro, Intel chips were CISC designs – Complex Instruction Set Computing processors. These made sense in 1980, because CISC made the programmer's job much simpler. Modern compilers, though, mean programmers don't care what goes on at the chip level.

This has created a rather weird situation where compilers choose sequences of the simplest 80x86 instructions, which then run on processors that have to support all the old complex instructions, and then get decoded into a different kind of RISC instruction inside the processor. Unfortunately for Intel, it turns out that others can do a far better job of designing this kind of processor. PC buyers aren't really complaining though, because the new chips can be made a great deal more cheaply than Intel's baroque silicon concoctions.

The basic approach now is to design a silicon decoder which takes Intel 80x86 instructions, and converts them into much simpler RISC instructions. These run on several RISC processors embedded within the chip, and make short work of the resulting scads of small, fast instructions.

AMD cleverly bought NexGen in 1995 – the leading chip design house as far as this approach is concerned, but hampered by its total lack of cash. AMD has now released the AMD K6 – a veritable Pentium killer. Intel is fighting back with its Pentium 2 (codenamed Klamath), which is really a Pentium Pro chip with MMX instructions bolted on. The Pentium Pro was Intel's first fully 32-bit chip to use RISC technology at its core. In an attempt to shift the goalposts, Intel is also using a new motherboard socket for Klamath. A risky move, especially when you consider that Cyrix is waiting in the wings with its eagerly anticipated M2 design.

As the PC market becomes more fragmented, one size no longer fits all. Home and business PC users want different things, and the new Network Computers can only create more divisions. Add in those manufacturers planning to sell PCs in the same way as TVs and VCRs – and at similar prices – and there are lots of new processor slots to fill.

New uses for PCs provide new opportunities for PC processor manufacturers. And they're rising to the challenge. Soon, a day will dawn when PCs are bought entirely on features, and you won't care what chip runs it any more than which one runs your car. Until then, simply turn the page to separate the hype from the happening.

The P2/66 is a great performer that's guaranteed to impress the neighbours – but just wait another six months for the price to get sensible. There's also a large amount of bundled software for you to whittle away the hours with.

AWESOME P2/66

£2,781 Viglen ☎ 0181 758 7000 **www.viglen.co.uk**

Awesome P2/266 is a version of the Pentium Pro aimed at desktop PCs, complete with a new proprietary chip packaging design that's intended to lock out all of the competition.

VIGLEN CONTINUES TO TURN OUT desirable kit. The Awesome P2/266 comes complete with 2Mb ATI Xpression graphics; an ESS1688-based soundcard; a PhotoDrive scanner; Maxtor 5Gb hard drive; 16/24-speed CD-ROM drive; 32Mb RAM; DataFlex 33.6K voice/modem; Envy 17-inch monitor with external controls and built in speakers; Cherry keyboard; microphone, and an Microsoft Intellimouse.

The elegant midi tower has one free external and one internal bay. Only two PCI slots are actually free for add-in cards, as what would have been a free ISA slot is taken up with an enhanced game card. The USB ports are also enabled.

The Awesome P2/266 also comes with the LS-120 floppy drive. This handles standard floppy disks as well as the 120Mb High Density Floppys. It's faster than a standard floppy, but much slower than the Zip drive – you wouldn't want to run applications from it.

Bundled software includes the usual five MMX titles, Microsoft *Money*, Windows 95B, *Fine Artists*, Microsoft *Explorapedia*, *Works*, *Wine Guide*, *Encarta 97*, and also *Dangerous Creatures*. There's *MechWarrior 2*, *Assault Rig* and *Wipeout* to soak up any spare time you may have as well.

An extremely desirable PC, though we would have preferred a full-height tower case

Benchmark results put the Awesome P2/266 well ahead of the K6, but not as far ahead as the extra 66MHz clock speed would suggest (certainly not enough to justify the price premium – unless you're very desperate for every little extra). The extra processing speed makes little difference to the graphics or hard drive performance. The reason for this is the bottleneck introduced by the expansion bus and motherboard speed. Raising the speed of just one component doesn't improve the performance of the whole PC by the same amount.

Inside is the new Intel motherboard design. You can't miss the processor – its black SEC package is huge: 140mm x 65mm with a full width and height heat sink some 40mm deep. The whole thing slides into the SEC slot (it only fits the one way round), where clips hold it in place. A neat touch is a hologram of the Awesome P2/266 dye on one side.

This is an extremely desirable PC, though we would have preferred a full-height tower case, and a little more internal expansion capability. On the downside, it's hellishly expensive, largely due to the high price of the new Pentium 2. Give it a few months and the price should come down to more affordable levels.

PENTIUM 2

The chip formerly known as Klamath. Launched in 233 and 266KMHz versions, it's a reworked Pentium Pro – Intel's chip of choice for 32-bit operating systems.

As with the K6, it uses the decoder and RISC core processor model, along with speculative execution, branch prediction and out-of-order execution.

Unfortunately for Intel, in many ways it doesn't really do it nearly as well – or as cheaply – as the K6. On the other hand, Intel has already shown a prototype Pentium 2 running at 400MHz.

The rework includes support for the 57 new MMX instructions, and dropping the Pentium Pro's on-chip 256K Level 2 cache. To compensate for the performance hit, the L1 cache has been doubled in size to 32K.

Intel also upgraded the chip's 16-bit performance. Pentium Pros run Windows 95 and legacy Windows applications much more slowly than a vanilla Pentium at the same clock speed.

MMX uses the floating point registers for the new instructions, but switching between floating point and MMX takes longer on the Pentium 2 than on the K6 – so some application mixes will definitely impact performance.

Perhaps the most interesting thing about Pentium 2 is just where it leaves the Pentium Pro. Clearly the regular Pentium processors will continue to have a much lower price tag – but the Pentium Pro, despite Intel's protestations, looks dead in the water.

The most obvious change is the brand new SEC – Single Edge Contact – chip packaging. The chip comes encased in a little package and is pre-mounted on a plug-in circuit board, which slots vertically into a socket (rather like a module of RAM chips). This is totally incompatible with current motherboard designs. Intel claim it's to help futureproof PCs, but everyone else believes it's to lock out competition with licencing deals.

However, the PC industry likes open standards and choice, so Intel may not be able to make this one stick.

AWESOME P2/66

- ✓ State of the art
- ✓ Great monitor
- ✓ LS-120 high capacity floppy
- ✗ Stupidly high price
- ✗ Limited upgradability

Specifications
Processor: Pentium 2/66
Memory: 32 Mb
Video card: ATI Xpression

***PC FORMAT* Rating 84%**

PLATINUM K6 200

£1,766 Vale ☎ 0800 6345999 **www.evesham.com**

AMD's K6 is a Pentium Pro class processor, designed to compete with Intel's high-end chips by offering more power at a lower price.

The Platinum K6 200 offers the leading edge performance, at trailing edge prices, due to its extremely impressive AMD processor.

AROUND THE 200MHz K6 YOU GET A standard midi tower box, and also an Iiyama 15-inch Vision Master monitor; 3Gb hard drive; Matrox Millennium graphics card; Sound Blaster AWE32 soundcard; DataFlex 36.6K modem; 32Mb RAM: 12-speed Panasonic CD-ROM drive; an easily disliked KeyTronics keyboard (just our personal view), plus a Microsoft IntelliMouse. Good specs for the price, wouldn't you say? And the motherboard is a Boston TX ATX type with an AMI BIOS that fully supports Universal Serial Bus (USB).

Evesham's build quality is good, in fact, too good in some ways. It goes so far as to put clear silicon sealant on connectors, to ensure they don't shake loose in transit. It also offers a full two-year on-site repair warranty – so it's extremely confident its PCs will last the entire course.

We can vouch for the speed and quality of the site support, because our review model came direct from another reviewer, and arrived in a state which can only be described as 'knackered'. Evesham's engineers quickly put things right, though.

One thing's clear: the K6 is a real Pentium-beater.

Our benchmark tests showed that the Platinum K6 200 performed much faster than the 200MHz MMX Pentiums that we reviewed recently, though it also shows up the problems you get when you compare apples with oranges: the Landmark test came in at 2,392 – nearly twice as fast as a 200MHz Pentium. This really is something of a nonsense result. It's well-worth checking out AMD's figures, though, at its Web site: www.amd.com.

We ran a variety of our favourite application and game software on the Platinum K6 200 after we'd finished the tests, and it all worked perfectly well – fine and fast. However, you don't get a great deal of software with it.

As a matter of fact, apart from the Windows 95 CD (OSR2 version), all it comes with is driver discs and the Matrox Millennium CD-ROM. On the plus side, all the documentation for the components is included in the overall package. But at the end of the day, one thing's clear: the K6 is a real Pentium-beater. If every PC with a K6 inside is as good as the Platinum K6 200, AMD should do extremely well.

In fact, without benchmarking it, the only way you can actually tell the difference between this model and a standard Pentium-based system (that runs at the same clock speed) is the price tag. The K6 comes in so much more affordably, you can add another goody to it – a Zip drive perhaps, or maybe a little more RAM. Okay, in practice, you probably spend the money on some extra software.

AMD K6

At one time, Intel was so upset with chip cloner AMD it sued – and lost. In 1995, AMD bought NexGen to grab its innovative K5 chip, but it was too late to take on the Pentium. Now it has the brilliant K6.

This uses the same core as the K5. It features two Intel 80x86 decoders which generate fixed length RISC86 instructions, actually decoding multiple instructions simultaneously. The results are fed to seven internal processors.

These execute the 20-bit RISC86 instructions out of order; carry out fully speculative execution while waiting for results from other processors, and make branch predictions using an 8,192-entry branch history table. It's the biggest in the business, and capable of coming up with the right numbers 95 percent of the time.

It also registers renaming on the fly in order to avoid unnecessary movement of internal data. All of this is packed into a six stage pipeline. For greater efficiency, it has a 64K L1 cache – 32K data and 32K instructions with instruction pre-decode to get things moving.

The K6 enables Pentium Pro level performance at similar clock speeds, but executes 16-bit code better than the Pro. It supports MMX instructions – licenced from Intel – and switches between floating point and MMX much faster than the Pro. Manufacturers rather like the K6 because it requires very little re-tooling. It fits a standard Type 7 socket, although some manufacturers have to tinker away with motherboard voltage levels, and BIOS support. This is trivial compared with re-tooling for Intel's new SEC, Single Edge Contact socket which thereby commits manufacturers to just Intel chips.

AMD plans higher speed versions of the K6, though it won't be producing a version with the current state-of-the-art 0.25 micron track size for another year. AMD's strongest weapon is low prices for similar performance – about £100 less than a 200MHz Pentium. It's rumoured that Intel's recent spectacular chip price reductions were a response to the K6.

PLATINUM K6 200

- ✓ Excellent components
- ✓ Faster than an equivalent P200
- ✓ Good Value
- ✓ Full documentation
- ✗ Lacks bundled software

Specifications

Processor: Platinum K6 200
Memory: 32 Mb
Video card: Matrox Millenium

***PC FORMAT* Rating 87%**

PRESARIO 2110

£899 Compaq ☎ 0181 332 3279 www.compaq.com

Cyrix' MediaGX processor enables PC manufacturers to build low-cost, high-specification home multimedia PCs to use straight out of the box.

The elegant Compaq Presario 2110 is a total PC solution: you use it, and if you need a better one – you replace it just as you do with VCRs and TVs. It really is as simple as that.

COMPAQ IS THE FIRST MANUFACTURER to create a PC around the Cyrix MediaGX chip, although queues are now forming. The 2110 comes in jet black (to compliment your hi-fi) and, nominally, it's a 133MHz Pentium class PC with 16Mb of RAM; 2.1Gb hard drive; 28,800bps modem; Sound Blaster AWE32, and eight-speed CD-ROM drive.

Setting up is fairly simple, due to colour-coded connectors. There's also a printer, joystick and serial port – and when you turn on the power, it's ready to use.

The 14-inch monitor has an unfortunately curvaceous screen, adequate built-in speakers, plus external set-up controls. It comes with Window 95 set to 640 by 480 pixels, with 16-bit (65,000 colours) graphics. At a more desirable 800 by 600 it appears flickery, and at 1,024 by 768, it's unusable. The matching mouse and keyboard feel a little flimsy, but perform well.

The small system box has volume and sleep controls on the front, with CD-ROM drive and floppy disk slots. You aren't intended to upgrade this system, so there are no free bays and no internal slots. There's also no level 2 cache. The only upgrades that are possible are to 128Mb of system RAM – in four SIMM slots – and a bigger monitor.

Inside the system box only the modem is on a separate card with its own dedicated slot. There are no video, sound or other cards – it's all on the motherboard. No user serviceable parts inside – as they say.

Windows 95B, Microsoft *Works* and *Money* are pre-installed. The application software is supplied without discs or manuals, and there's no technical documentation either. Other things you don't get include CD titles and games, though there is a trial AOL account. So, unfortunately, it's all fairly minimalist.

However, Compaq does supply a Restoration floppy and CD-ROM, which re-installs the system to its original state. This is an idea others could (and should) follow.

We ran our usual tests over the 2110 and, to be honest, it isn't a great performer. 2D graphics performance is average, but the 3D performance is rather poor. The hard drive is fast enough, and though the processor turns in a good benchmark, multi-tasking works it far too hard. But then again, its target market is whatever power users aren't. As a one-stop home multimedia solution for playing the odd game, getting on-line, handling correspondence and accounts, it's just fine. However, the price isn't nearly as competitive in the UK as it is in the US. PCF

CYRIX MEDIAGX

What this world needs, thought Cyix's management, is a PC on a chip that does away with graphics and soundcards (and anything else you could lose to save money). So, take one MediaGX chip, a Cx5510 controller chip, a RAMDAC for colour lookup, then add some system RAM – and Hey Presto! – instant PC.

MediaGX features XpressRAM, XpressGRAPHICS and XpressAUDIO technology built in, all under the control of a fourth new technology called VSA – Virtual System Architecture. VSA ensures the chip technologies don't clash.

MediaGX interfaces directly to the PCI and system RAM bus, the graphics RAMDAC and memory. Bridging to the ISA bus (should there be one) is handled by the Cx5510, which also provides the Sound Blaster-compatible interface. XpressGRAPHICS uses system RAM for graphics memory, and handles graphics processing on chip. The final result is a PC with a lower component count and a much lower build cost.

Cyrix claims that MediaGX performs as well as a Pentium at the same processor speed. In practice, this isn't the whole story. First, its floating point performance isn't as good as a Pentium's, it doesn't currently support MMX instructions, and all the extras built into the processor soak up cycles. The graphics support is limited to 16-bit, 8-bit and 4-bit with low 60Hz refresh rates at the higher resolutions. MediaGX machines use system RAM for the graphics frame buffer. It isn't as fast as dedicated Video RAM, and the system RAM (up to 2Mb) that's used for graphics isn't available to applications.

At the moment, the Cx5510 doesn't support USB – Universal Serial Bus – but this will be added this year together with Synchronous RAM support for a much faster performance.

Cyrix is already working on upgraded versions of the chip to run at 150 and 166MHz. A 180MHz version with greater internal efficiency is promised for the end of the year, along with a 200MHz MediaGX with MMX support.

PRESARIO 2110

- ✓ Unusually low cost
- ✓ Complete multimedia system
- ✓ A wide range of uses
- ✗ Poor high resolution graphics
- ✗ Limited upgrade options

Specifications

Processor: Cyrix MediaGX 133
Memory: 16Mb
Video card: No card

***PC FORMAT* Rating 88%**

"Strap on your seatbelt, turn up the 8-track, and get ready for one helluva cool ride."

-PC Games

"One of the best gaming experiences of the year."
93% - PC Power

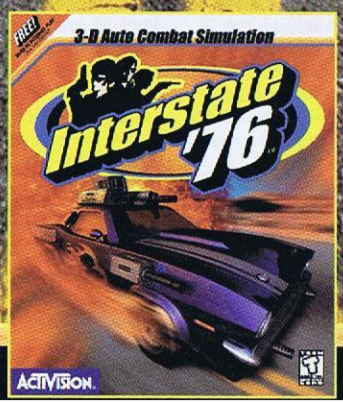
"Long on style and humour."
4/5 - CGW

"An exciting and thoroughly involving experience."
8/10 - Edge

"Interstate 76 is easily one of the most immersive and charismatic games around."
8/10 - PC Review

"Fab, cool and groovy stuff."
89% - PC Home

"Interstate 76 is one bad ass mutha of a game."
4/5 - C&VG



ACTIVISION

www.activision.com

Built funk-tough on Windows® 95.

SAFE FROM HARM

If the thought of your PC falling over is enough to turn you a whiter shade of pale, then our round-up of rescue and remedy software is just what the doctor ordered.

YOUR PC IS A FICKLE FRIEND. YOU HAPPILY chug along, without a care in the world, when out of the blue your bezzy mate turns the tables on you and refuses to budge. And the awful truth is that it's all your fault. You must have done something to make everything go so horribly wrong – a seemingly simple installation, or a file you deleted in a reckless bout of gay abandon is all it takes to send your system files into spasms. The fact that your PC fails to warn you of the imminent danger is irrelevant, because the buck stops with you. Frankly, unless you intend to keep your PC at arm's length, crashes and hangings go with the territory.

Perhaps you actually relish the thought of doing battle with the inner workings of the PC (you only need to look at young Luis Villazon, our resident guru). For most sane beings, however, the thought of spending hour upon hour trying to bring an ailing PC back to life is about as appealing as an eight-hour lecture on bees. This round-up of rescue and remedy utilities ensures you never have to experience such a fate.

Although none of the available applications are anywhere near foolproof, they provide an effective means of keeping track of your system, and alerting you of impending dangers – keeping a back-up of all your crucial system files could be the best thing you ever do. Many of the utilities available are also extremely useful if you want to keep your PC's house in good order: being able to uninstall programs is invaluable to clear out all the nasty files that Windows doesn't want to know about, and diagnostic utilities enable you to identify any aspect of your system that's not pulling its weight.

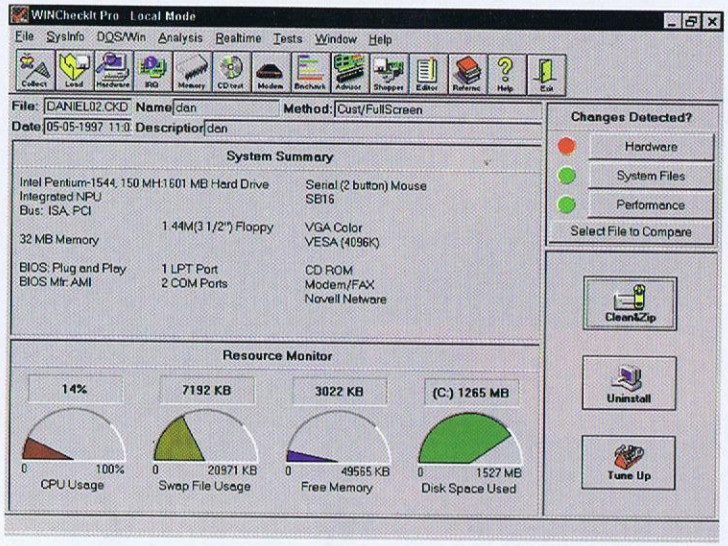
Here at *PC FORMAT*, we're all for a bit of experimentation – so in a bid to encourage you to take your PC by the horns and to help you sleep soundly at night, we've brought together some of the utilities that are at hand. And if all else fails, and things still go horribly wrong, you can always get in touch with our Mr Villazon to offer you a lifeline. ➡

Illustration Steve Caplin

CHECK IT DIAGNOSTIC KIT

£69.99 Touchstone Software
☎ 0181 875 4456

AS ITS NAME WOULD SUGGEST, THIS title from Touchstone leans heavily on the side of diagnostics, with the inclusion of *WinCheckIt Pro*. This is a fairly comprehensive utility that enables you to determine exactly what's going on in the dark recesses of your PC (the status of everything from I/O addresses to IRQs, RAM, CMOS and BIOS is listed in detail). The program gives you access to information about all your key components and enables you to perform basic benchmark tests to establish whether they're up to scratch. This is a useful way of putting your mind at ease if you've splashed out on new hardware, and is also a safe place to turn if you think that your PC has seen better days.



With *WinCheckIt Pro* there's nowhere to hide – all your system's failings laid bare.

The only problem with regards to this is that the maximum benchmark available for comparison is a P133, which is a little dated as we enter the age of sixth generation PCs. *WinCheckIt Pro* is also at hand to evaluate all your system files, and there's a System File Editor that enables you to selectively edit or restore prior versions of your critical files. In addition, there's a Tune Up utility that automatically consolidates Windows memory fragments and increases the size of the largest memory block available. A Clean and Zip facility is included which enables you to track down any unwanted files on your system.

Once you locate redundant, orphaned or duplicated files, you can delete or compress them to free hard disk space. The only let-down is a weak Technical Reference Library that only serves to condescend; plus a couple of features, such as the Software Shopper, which lists the system requirements for software that you won't want. Touchstone also throws in a few screwdrivers to give the idea that it's okay to tinker with your PC.

Putting your mind at ease if you've splashed out on new hardware

CHECK-IT DIAGNOSTIC KIT

✓ Impressive diagnostics
✗ Rather expensive and dated

Processor	Min: 386	Rec: 486
Memory	Min: 4Mb	Rec: 8Mb
System	✗DOS ✓WIN 3.1	✓WIN 95
Video	✓VGA ✓SVGA	✗ 3D card

***PC FORMAT* Rating 77%**

PC CARE

£46 American Megatrends
☎ 01293 882288

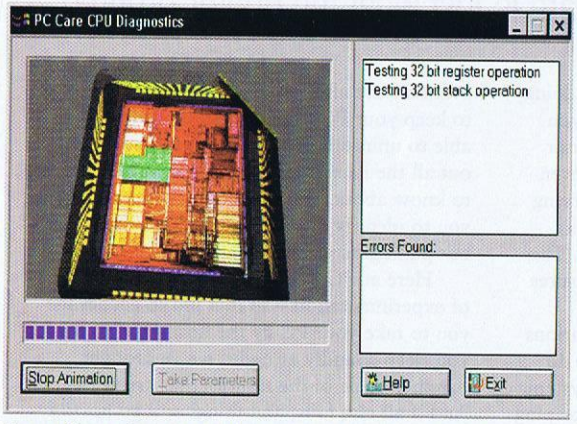
AMERICAN MEGATRENDS BOASTS THAT it's the brains behind over half the world's BIOS chips, so expectations were high for this diagnostics-based utility. Unfortunately, its reputation in other fields fails to shine through for *PC Care*. There are five core components that attempt to identify and eliminate hardware conflicts; remove unwanted programs; recover disk space, and boost speed and efficiency. This is all well and good, but actually achieving these goals is easier said than done.

The *PC Care* diagnostics utility is remarkably unintuitive and takes forever and a day to run a full system check. Once everything is laid bare, the absence of benchmark tests means that there's no real indication of how anything is performing. Conflicts with drivers, hardware and IRQs are placed under the spotlight, but this is no more than you discover when using Windows 95's system tools.

The awkward interface is also in evidence elsewhere: the uninstall utility is as unfriendly as anything we've seen, and makes cleaning out unwanted applications a confusing, worrying task. The manual doesn't particularly help matters, and the on-board help is infuriatingly simplistic. In one instance we were laughably informed that clicking on one of the buttons performs the task written on the button.

The Clean Up utility is a little better and gives you the opportunity to track down your unwanted files – temporary, orphaned, duplicated or unused. However, the failure to offer cautionary advice when you're about to delete potentially important files is another problem that doesn't do *PC Care* any favours. In essence, the software does what it's supposed to do, but the clunky approach and lack of information leave you feeling as though you're tinkering on a wing and a prayer. Only for the head-strong or the foolhardy.

The absence of benchmark tests means that there's no real indication of how anything is performing



Diagnostics are included in this program, but patience is a virtue, because running a full assessment can be a time-consuming process.

PC CARE

✓ Bares your PC's inner workings
✗ Fails to inspire confidence

Processor	Min: 486	Rec: 486
Memory	Min: 8Mb	Rec: 10Mb
System	✗DOS ✗WIN 3.1	✓WIN 95
Video	✓VGA ✓SVGA	✗ 3D card

***PC FORMAT* Rating 52%**

RESCUE ME

£29.95 Kiss Software Corporation ☎ 0181 875 4400

MORE FOCUSED IN ITS APPROACH THAN any of the other applications in our group test, the sole aim of *Rescue Me* is to keep an eye on those all-important system files, and it promises to be there with a full back-up of your most recent working configuration. Once installed, *Rescue Me* takes a snapshot of your system in order to record information about the Registry, configuration files, directories, file versions and hardware. The idea is that by comprehensively backing-up all your system files, you can always recover your PC should it decide to fall over.

If, for example, a new driver causes your PC to crash, *Rescue Me* lives up to its billing by reinstating your previous files. And if things go horribly wrong and Windows refuses to boot, you can even restore the original files from DOS. You can choose to automatically take snapshots of your system at customisable intervals or manually do the deed before you make any new changes. *Rescue Me* retains a history of alternative system files, so you can also switch between different configurations with ease.

If things go horribly wrong and Windows refuses to boot, you can even restore the original files from DOS

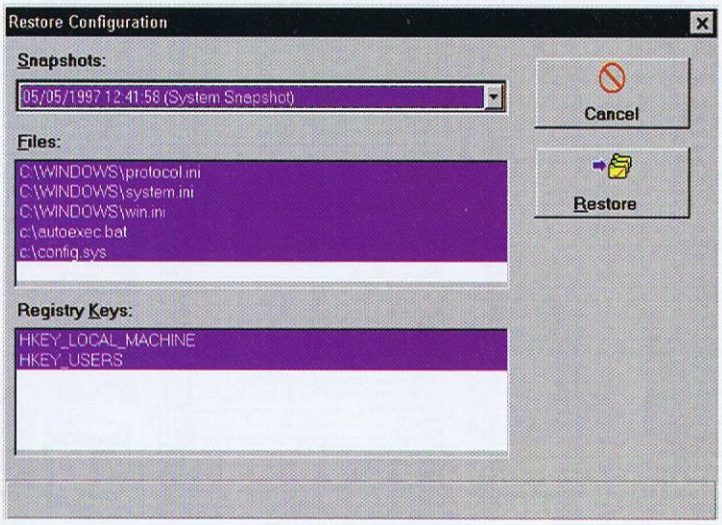
For peace of mind, *Rescue Me* is definitely worth the premium, but the interface isn't the greatest we've ever seen. As with many utility applications, it stands accused of a bulky and dated approach to representing folders, buttons and hierarchies. you should also note that there are other applications which offer you a similar service, with plenty more features besides, for an equally acceptable fee. For example, *First Aid 97's* Backtrack Monitor is a comparable application that sits alongside a strong host of other utilities.

RESCUE ME

✓ A no-nonsense back-up utility
✗ Hasn't that much to offer

Processor	Min: 386	Rec: 486
Memory	Min: 4Mb	Rec: 8Mb
System	✗DOS ✓WIN 3.1	✓WIN 95
Video	✓VGA ✓SVGA	✗ 3D card

***PC FORMAT* Rating 80%**



You won't find any bells and associated whistles with this program, but *Rescue Me* could turn out to be your saving grace if your PC's system files go haywire.

FIRST AID 97

£34.95 Cybermedia ☎ 0800 973631

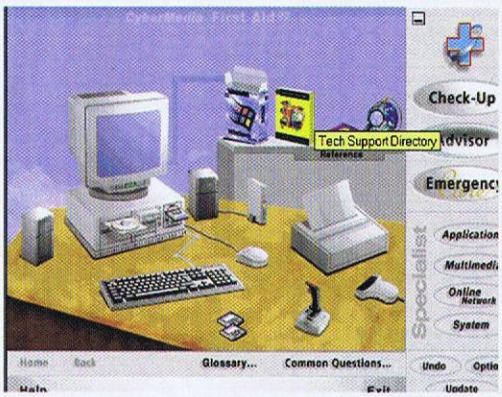
TAKING THE TAPE IN THIS FOUR-WAY contest, *First Aid 97* doesn't even need to look over its shoulder. The interface is by far the smoothest of all the packages we tested: the rubber-esque buttons are satisfyingly responsive; the interaction is polished – and taken as a whole, it belongs to the year of its billing.

The interface is by far the smoothest of all the packages we looked at

Aesthetics aside, there's plenty to play with, considering the slender price tag. At its core is Windows Guardian, which runs automatically every time you boot into Windows 95, and places a turquoise cross on the Taskbar to tell you it's on the case. It looks for any problems in Windows and includes features such as a Crash Protector to alert you of any impending danger, thus enabling you to save your work before you suffer any loss. There's also an impressive Early Warning feature that interrogates the latest smart status technology, to determine whether your hard drive is on the brink of collapse – once again providing an opportunity to back-up important data.

Other preventative components of *First Aid 97* worth a mention include *Dr Solomon's FindVirus,* plus a Backtrack Monitor that recalls your most recent system files should anything go horribly wrong. In addition, there's a range of practical solutions to any problems that you might have. An Advisor is also at hand to track down the source of your troubles. Once pinpointed, help is available courtesy of the Check-Up facility – although, in reality, this provides a bridge to Windows 95's own help files.

More impressive is a direct link to the Net which seeks out the relevant FAQs regarding your query – and a copy of Cybermedia's Tech Support Directory, which lists all the necessary contact details for virtually every PC-related company you can think of. Hassling the appropriate authorities is sometimes the only option when things go pear-shaped, so this is a brilliant inclusion that rounds off a remarkably comprehensive package.



CyberMedia includes its Tech Support Directory both within the 1st Aid software and in its full paper format.

FIRST AID 97

✓ Comprehensive approach
✗ Relies on Win 95's helpfiles

Processor	Min: 386	Rec: 486
Memory	Min: 4Mb	Rec: 8Mb
System	✗DOS ✗WIN 3.1	✓WIN 95
Video	✓VGA ✓SVGA	✗3D card

***PC FORMAT* Rating 88%**

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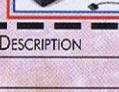

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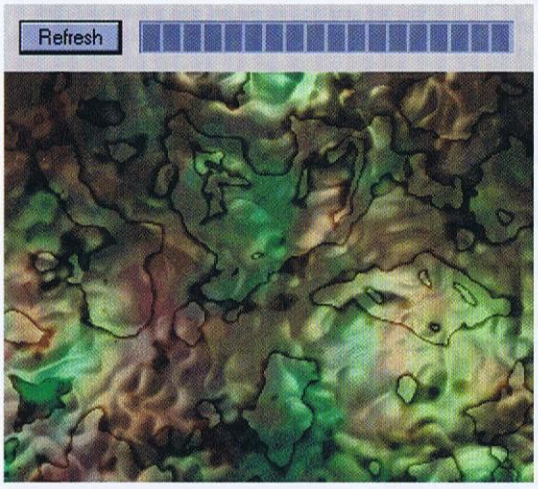
PCF(7)

TEXTURE CREATOR

$129 Three D Graphics ☎ 001 310 553 3313 www.threedgraphics.com

No prizes for guessing what *TC* does, because **Dave Woods** knows it does what it says on the box... and in a decidedly uninspiring way.



At least the textures themselves offer crumbs of visual comfort.

TEXTURES ARE ACE. THE ACTUAL dictionary definition may be a bit boring ('the surface of a material'), but close your eyes and think of the physical attributes: the crinkle of leather you smell from 10 paces, or the spaced-out psychedelia conjured from the creative process of over-ambitious 1970s TV viewing. If you want to use textures on your Web page – or in conjunction with your favourite graphics program – there are two techniques to follow.

For a start, you are able to take a photograph or scan of an everyday object. It's quite amazing what you can produce using this technique and a copy of *Paint Shop Pro*.

Alternatively, you can purchase the software that does it all for you. Now, when you buy this software, the first thing you tend to do is turn to the manual for a bit of gentle reassurance. Cue *Texture Creator*: '*Texture Creator* is a Procedural Texture Rendering application'. What this effectively means is that this package's mission in life is to create textures on your PC, without any outside help. It comes complete with 200 presets that you can use as a stepping stone, or start one up from a blank slate, if you prefer. Either way, the process involves setting parameters for different layers such as materials, colours, blends, surfaces and lighting. Once you're happy, you render the texture at any resolution, and there's a handy batch processor to help with those pile-ups.

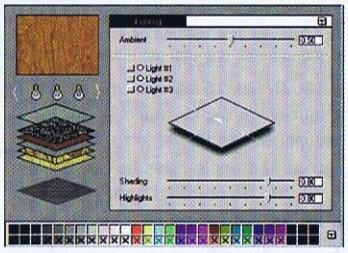
Texture Creator makes textures with reasonable aplomb, but there are a few sizeable 'buts'

A selection of 'buts'

Texture Creator makes textures with reasonable aplomb, but there are a few sizeable 'buts' which stop it receiving a high mark. With so many different parameters to tweak, the interface needs to be fun and fluid – so you forget what you were trying to do, and just experiment. However, *Texture Creator* is dull. It's like a hybrid of John Major's underwear and 10-pin bowling on Live TV.

The interface is unfriendly and badly designed – it should have been based on *anything* spawned from the mind of Mr Kai Krause, instead. We're sorry to keep banging on about him, but check out the Texture Explorer filter which makes up just one part of his *Power Tools*. Now, that's the way to do it. All you get with the *Texture Creator* is frustration – the slider bars have to be dragged along; the main working window can't be re-sized, and the inclusion of only one undo hampers experimentation. The documentation is also very dry.

All of this may sound harsh, but there are no excuses. This package might do what it says on the box, but that just isn't good enough. If this program was a texture, it would be a grey, lifeless slab of concrete. Yep, the truth is heavy, and it hurts. PCF



The interface is so dull that we thought about running a blank instead of this grab, but eventually relented at the last minute.

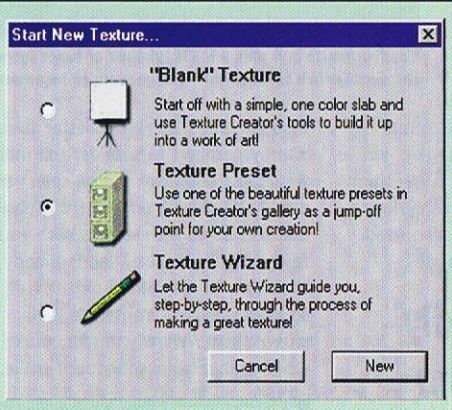
TEXTURE CREATOR

- ✓ Contains those lovely textures
- ✓ Handy batch processor
- ✗ Dreary interface
- ✗ Wordy manual
- ✗ General lack of imagination

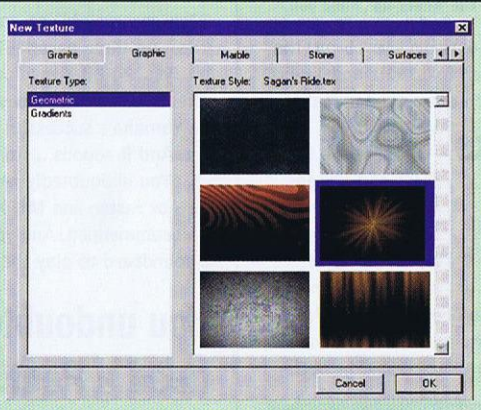
Processor	Min: 486DX	Rec: Pentium
Memory	Min: 8Mb	Rec: 16Mb
System	✗DOS ✗WIN 3.1	✓WIN 95
Video	✓VGA ✗SVGA	✗ 3D CARD

***PC FORMAT* Rating 54%**

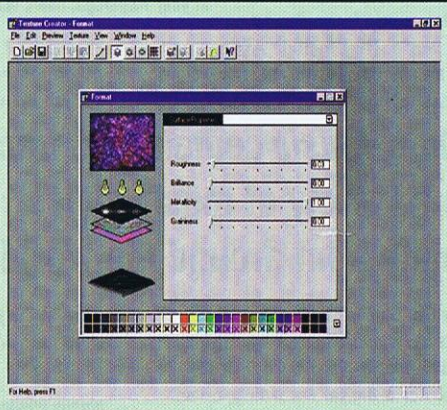
CREATE A TEXTURE SCRAPE THE SURFACE WITH STYLE...



1 It's easy to create your own texture. Just select New from the File menu, and – from the opening dialogue box – start from scratch (or use one of the preset textures as a springboard to your desired effect). If you feel particularly lazy, just hit the Wizard, which responds by taking you firmly by the hand and leading you through the entire process.



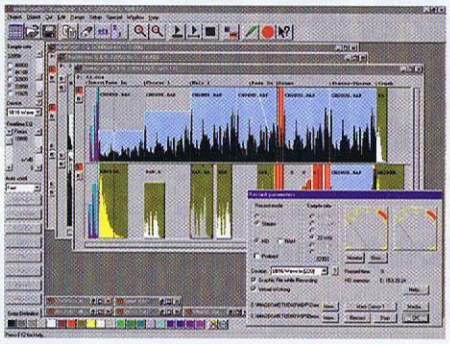
2 To begin with, it's best to load one of the pre-defined styles. You can choose from eight different styles, each of which features its own sub-categories. We've decided to plump for Sagan's Ride, because it looks and sounds extremely painful. Double-click on the texture, and you're dragged into the Texture Creator itself. From here you can tweak to your heart's content.



3 Save your texture under a different name (there aren't many presets as it is, without overwriting them with your dabblings), then define the size and resolution of the final rendering in Image Setup. Once you have achieved this, you can begin tinkering with all the settings, adding and subtracting lighting like it's going out of fashion...

MUSIC STUDIO

£29.99 Telstar Leisure
☎ 0181 805 8005



You can create songs from shorter recordings, apply effects, and mix. It sure beats singing in the shower.

A HOME RECORDING STUDIO for less than a tank of petrol? *Music Studio* is a four-track digital audio sequencer which is able to record at sample rates up to 48kHz. Recordings appear as waveforms on the screen, and you can drag them onto any of the tracks. Creating arrangements is very easy, as *Music Studio* can save data direct-to-disk, or to RAM – and you can apply a range of digital effects, including reverb, echo and filtering.

Check out the Soundpool CDs (£19.90 each) which contain dozens of samples in various styles, including techno, trance, jungle, hip-hop, soul, R&B, rock, and rap. Simply load a few samples into *Music Studio,* and create your very own backings or songs. The CDs are primarily for use with *Music Maker* (£29.90), which is specifically designed for loading and then playing sample loops such as these. If you want to make your own recordings, *Music Studio* is cheap and simple.

Load a few samples into *Music Studio,* and create your very own backings

MUSIC STUDIO

✓ Surprisingly powerful
✗ A touch cheap and cheerful

***PC FORMAT* Rating 82%**

MUSIC ACE

£29.95 Guildsoft
☎ 01752 8951000

With jolly graphics, animation, plus a point-and-click interface – *Music Ace* appeals particularly to the young.

WANT TO LEARN MUSIC? Perhaps it's not the most stimulating pastime in the world, but *Music Ace* makes it as interesting and as enjoyable as it can be. Maestro Max (why do all music tutorials have a professor viz a voreign aggsent az your guide?) speaks, points and helps you through the various lessons.

The program teaches with graphics, animation and, of course, sound (both WAV and MIDI). The lessons are reinforced by a series of games where you have to click the correct note name, decide whether two notes have the same pitch, and so on. The program tracks your score and several users are able to log-on, so you can compare your virtuoso performances.

Using the Doodle Pad, you can drag notes onto the stave and create little tunes of your own, but this is simplistic. There are over 30 pre-programmed tunes, as well. It's aimed at ages eight to adult, and although youngsters may enjoy it more, you learn and appreciate it at any age.

The program tracks your score and several users can log-on

MUSIC ACE

✓ Very well designed
✗ Simplistic in places

***PC FORMAT* Rating 86%**

MULTI-MUSIC

£19.95 Mantra
☎ 01706 788533

You have a selection of the world's finest musical styles at your fingertips. Can't spot the 'knees-up', mind you.

DOING MULTIMEDIA, GUV? Bit of Web site design? Want some music clips? *Multi-Music* contains 20 tracks in a variety of music styles, many from around the world. They include African and Asian rhythms, Latin, baroque, light classical, country, and corporate identity pieces. The tracks are divided into parts, which can be auditioned and copied to your hard disk for use in either a digital recording, or an authoring program.

The files have been designed as loops, so they're particularly easy to use as backgrounds, or in running presentations. There are two sets of files on the CD: one of them has been recorded at 44.1kHz and 16-bit; the other converted to 11kHz and 16-bit (which is much more economical for Web use).

There are four front-end screens from which you make a selection – audition, world map, studio and library. Do you need them all? We think not. More music and much less multimedia graphics would be better.

***Multi-Music* contains 20 tracks in a variety of music styles, many from around the world**

MULTI-MUSIC

✓ Superb music arrangements
✗ Unnecessary front end

***PC FORMAT* Rating 84%**

SOFTSYNTH

£20 Yamaha-Kemble
☎ 01908 366700

Load, organise and play a MIDI jukebox of tunes from the *SoftSynth's* front panel – and prepare to be amazed.

HERE'S A GROOVY IDEA – A synth module that resides in RAM rather than on a soundcard. It's Yamaha's S-YXG50 *SoftSynth*, and it offers a full 44.1KHz 16-bit sound set, an amazing 676 programmable voices, 21 programmable drum kits, and three parallel 24-bit (yes, 24-bit!) resolution effects. It's actually based on Yamaha's successful XG sound set. And it sounds... stonking!

You undoubtedly need a Pentium 166 or faster, and MMX technology is recommended. And you also need a soundcard to play the sounds through, but they're far better than namby-pamby FM sounds, and many wavetable sounds. You can select and play MIDI files from the front panel, and use *SoftSynth* sounds with your favourite sequencer. There's a copy available for download on the Net, so take a look at Yamaha's Web site at: http://www.yamaha.co.uk. Go on, make your soundcard smile.

You undoubtedly need a Pentium 166 or faster, and MMX technology is recommended

SOFTSYNTH

✓ Big sounds at a small price
✗ Not quite up to real-time speed

***PC FORMAT* Rating 90%**

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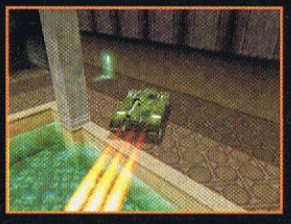

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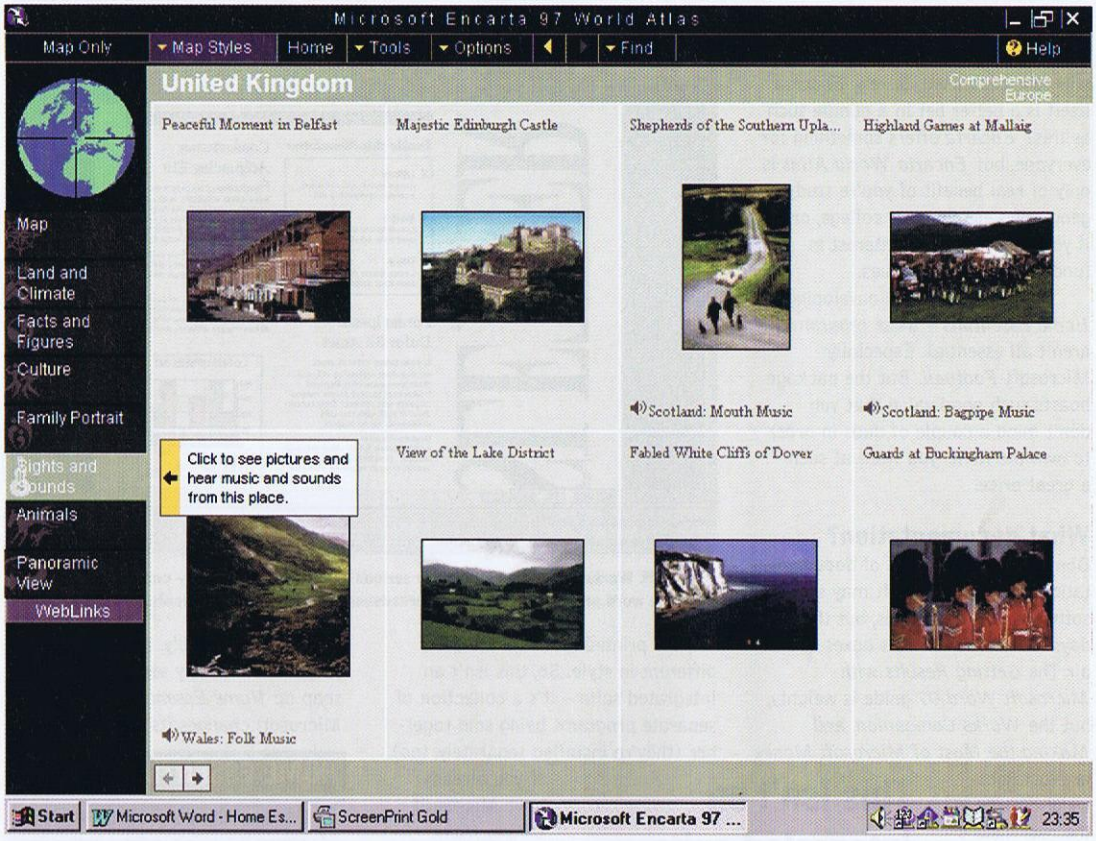


***Encarta 97 World Atlas* isn't just a bunch of maps, but is instead a multimedia tour of the world, its politics and geography. Look and learn.**

MICROSOFT HOME ESSENTIALS 1997

£99 Microsoft ☎ 0345 002000

Could it be too good to be true? **Rod Lawton** discovers how to acquire top Microsoft applications for less than half price...

THIS CAN'T BE RIGHT. £100 FOR all these programs? They're not re-released relics, either, but the latest versions of some of Microsoft's leading applications. Tot-up the individual RRPs of each of the programs in this bundle, and you end up with a whopping £295. The *Microsoft Home Essentials* pack costs a mere £99 in the shops.

To put it in perspective, that's the price of Microsoft *Word* alone, bought separately. *Works 4.0* isn't far behind, either, normally selling at £80. *Encarta World Atlas* retails at £50, while *Money 97* is £30. We won't dwell on the dismal Microsoft *Soccer,* because that would hardly be a bargain at any price, and you do expect *Internet Explorer* to turn up free in a packet of corn-flakes these days. But Microsoft *Home Essentials* is a great buy, nonetheless.

Works 4.0 is the latest version of Microsoft's do-it-all integrated application, and probably the program you could least do without, although *Word* isn't far behind in the essential stakes. Okay, Word's less versatile than *Works* (it can't handle databases and spreadsheets) – but it's the world's best WP package, and can handle everything from novels to Web pages. It's also got a powerful set of drawing tools.

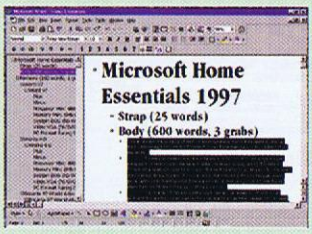
Value for money

Equally essential is Microsoft *Money*. Yes, monitoring your finances on a PC can seem incredibly sad, and there isn't much point if you don't have the money anyway. However, if you are 'well off', this software enables you to become richer; if you're skint, it stops you from getting poorer.

What about *Encarta World Atlas?* Well, its level of detail is mesmerising, and it comes with many photographs, cultural profiles and ➡

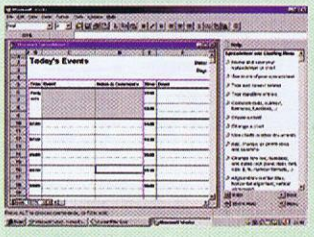
What's in the box

Not a bit like a lucky dip, you know exactly what you're getting from the word 'Go'.



Word 97

The best WP available, the DTP tools are easier to use and more flexible, and the program is even better at building long, structured documents. Its excellent outlining tools have been supplemented by a 'document map', which enables you to view your document's structure of headings and sub-headings. All this ought to make it sluggish, but it rips through text at lightning speed. Although it features a few too many buttons, toolbars and so on, you'll still pick up the basics in minutes.



Works 4.0

Consisting of a WP, database and spreadsheet, making it capable of just about any household or small office task, this *Works 4.0* is directed at PC owners who don't have to handle their company's accounts. Unlike *Office 97*, it's not a whole suite of separate programs, but a single do-it-all-application. You don't get all of the bells and whistles, obviously, but most of the time you don't actually need them.

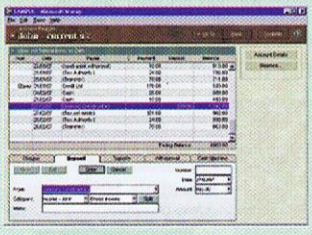
It's easy and flexible – the only problem is that because this collection features *Word 97* already, it's really only useful for databases and spreadsheets.

Encarta 97 World Atlas

If you want history, definitions and scientific explanations, you need *Encarta*. But if you desire national borders, city maps and population statistics, you need *Encarta 97 World Altas*.

Starting from a view of the globe, you zoom in on the continent, country or even town that takes your fancy. Or, if you can locate place names via the index. *World Atlas* includes sound samples and cultural profiles to give you a feel for the countries. The map detail is astonishing, down to individual villages in the UK.

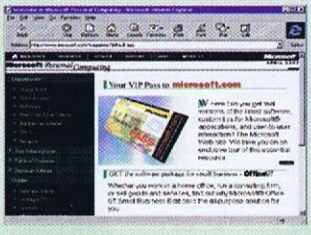
What's in the box



Money 97

Are your finances a mess? Most of us can't move for mortgages, PEPs, pension plans and chargecards – so a program that keeps your money sorted out must be good news.

Money 97 is almost the best you can get (*Quicken 6* just steals it). All your transactions are logged in 'registers' (one for each account); while standing orders, DDs and other regular payments can be inserted automatically. Transfers between accounts are simple, but the best feature is that it tells you how much money you have at any one time (which probably sounds like an impossible dream).



Internet Explorer

A year or so ago, Netscape *Navigator* was the world's favourite Web browser, and *Internet Explorer* was a long way behind. Since then, it's been given away free with practically every bit of Microsoft software sold. *Internet Explorer?* You can't move for it...

This probably explains why Netscape is now dropping the consumer market, and aiming instead at corporate users with its new *Communicator*. This leaves the consumer field free for Microsoft. It's not a problem, because *Explorer* is pretty damn good, and comes with equally decent e-mail and newsreader programs.

Microsoft Football

After lavishing praise on the other five programs in *Home Essentials*, it's time to stick the boot into Microsoft *Football*.

Technically, it includes everything: motion-captured on-pitch action, crowd chants, networked multiplayer matches, customisable playing styles – plus the chance to develop coaching strategies and take on the world (choosing one of nearly 100 international sides).

But then, reality kicks in. Microsoft *Football* is absolutely awful. Managerial strategy is one thing, but out on the pitch where it counts, this title is as much fun as a supermarket queue.

➡ map variations (population, politics or ecology, for example) – but it's still too specialised. Surely, *Encarta* itself is a better bet in a bundle such as this? *Encarta* offers something for everyone, but *Encarta World Atlas* is only of real benefit of you're studying geography at school or college, or if you have a genuine interest in fundamental global issues.

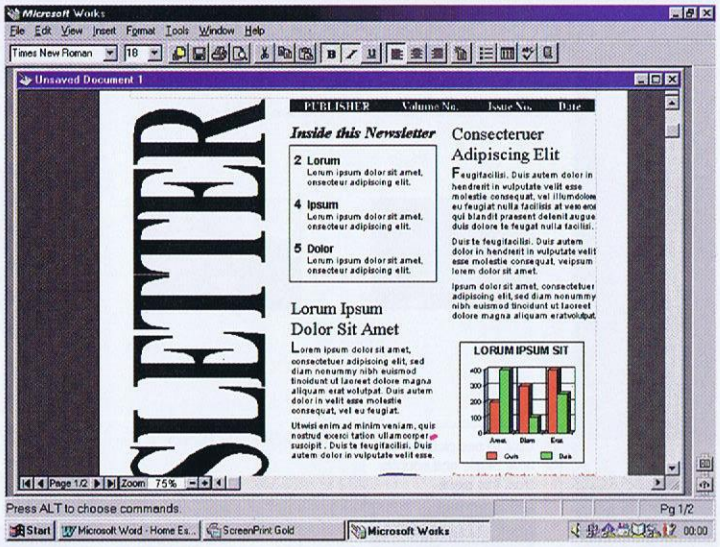
This is the paradox enveloping *Home Essentials* – these programs aren't all essential. Especially Microsoft *Football*. But the package boasts such good value that you don't mind a couple of duds in order to own the items you want at such a great price.

What documentation?

Don't expect vast wads of documentation though. Microsoft may stuff its software full of features, but these days it tends to stuff its boxes with air. The *Getting Results with Microsoft Word 97* guide is weighty, but the *Works Companion*, and *Making the Most of Microsoft Money* are just lightweight intros – the real meat's in the on-line documentation. This is okay if you spend your life clamped to your PC, but not much use if you fancy a quick browse on the bus. And although the CDs are similarly styled and look part of a set, the printed manuals are quite different in style. So, this isn't an integrated suite – it's a collection of separate programs being sold together (they're installed separately, too).

This isn't an integrated suite – it's a collection of separate programs being sold together

If you already have Microsoft *Office*, *Home Essentials* is anything but essential – you're better off buying the extra apps you want separately. And if you own Microsoft *Works* – and don't find its word processor lacking – you're wise to buy the other programs separately, too. However, if you don't have any serious software, snap up *Home Essentials* before Microsoft changes its mind... PCF



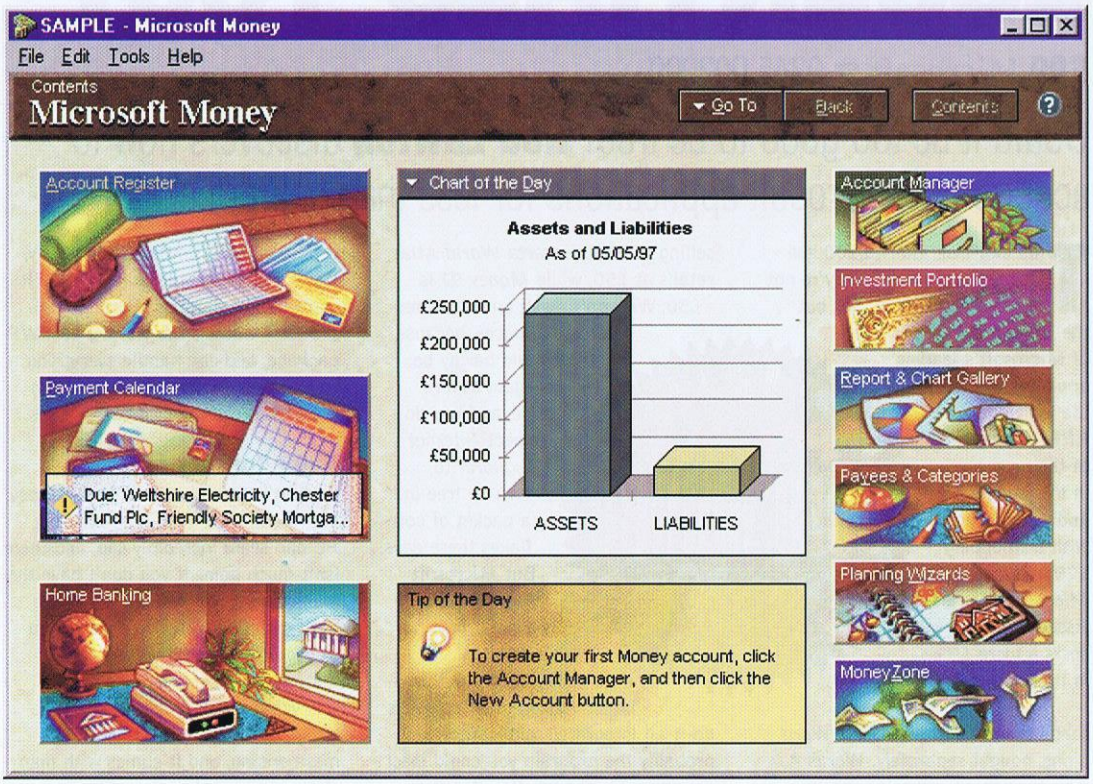
Microsoft *Works 4.0* could be the only serious application you need – combining all the requisite word processing, database, spreadsheet and basic drawing tools.

HOME ESSENTIALS 1997

- ✓ Best word processor available
- ✓ *Word 97* alone is the same price
- ✓ All programs are latest versions
- ✓ Quite simply a veritable bargain
- ✗ Microsoft *Football*
- ✗ There are some duplications

Processor	Min: 486/66	Rec: Pentium
Memory	Min: 8Mb	Rec: 12Mb
System	✗DOS ✗WIN 3.1	✓WIN 95
Video	✗VGA ✓SVGA	✗ 3D card

***PC FORMAT* Rating 90%**



***Money 97* gets the most wayward of finances back under control. Handling your money doesn't get much easier than this.**

Internet Access without the Excess

£7.50 +VAT PER MONTH PAID ANNUALLY

Company	Both 56kbps Modem Technologies	Free Windows Software Supplied	ISDN* or Modem at same price	Annual cost† based on hours on-line per month			
				1 hour	6 hours	12 hours	24 hours
AOL	x	✔	x	£71.40	£93.60	£226.80	£493.20
Compuserve‡	x	✔	✔	£78.00	£101.40	£241.80	£522.60
Demon	x	x	✔	£132.50	£132.50	£132.50	£132.50
Easynet	x	✔	x	£143.80	£143.80	£143.80	£143.80
Pipex Dial	x	x	x	£175.00	£175.00	£175.00	£175.00
Global Internet	✔	✔	✔	**£89.99**	**£89.99**	**£89.99**	**£89.99**

*From anywhere in the UK.

†Includes any applicable setup charge but not introductory offers.

‡Compuserve prices are set in US Dollars and converted at prevailing exchange rate.

Information correct at time of going to press.

All prices exclude VAT (where applicable).

All trademarks acknowledged. E.&O.E.

Includes Microsoft® Internet Explorer

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2. Fast Web Browsing
3. 56k Ready - BOTH TECHNOLOGIES
4. First Class Support — 7 DAYS A WEEK
5. 100% Local Call Access — ACROSS THE UK AT UP TO 33.6
6. Everything You Need — TO GET ONLINE · CD OR DISKS
7. No Set-up Charges — ON QUARTERLY OR ANNUAL ACCOUNT
8. No Hourly Charges
9. 3Mb Web Space - Free
10. ISDN or Modem — AT THE SAME PRICE

Global Internet Annual Account
£89.99 ex. VAT £105.74 inc. VAT

BONUS — Recommend a friend and get 1 month's FREE access

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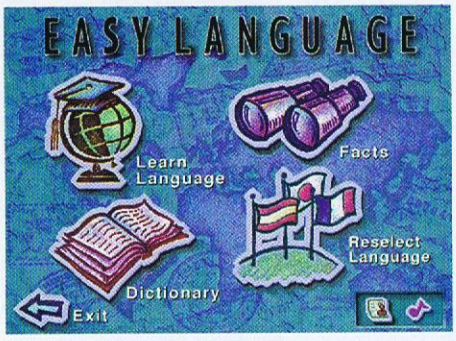
113-123 Upper Richmond Road . London SW15 2TL
Tel: 0181-957 1027

THE CRITICAL LIST

Swooping low over the valley of multimedia releases, we cast an eagle's eye view over the latest and greatest CDs. Then we tear the worst discs to shreds with our claws.



LANGUAGE 140

If Johnny Foreigner can't be bothered to learn English, you'll have to converse with him in his own bizarrely unpronounceable tongue, or else shout even louder. Don't be a putz, learn the lingo from these tutors before you venture out into the world of overseas travel.

WAR 143

Find out about the horrors and heroism of war with the very best in martial multimedia. From Genghis Khan to General Shwarzkopf – if they've been responsible for a vast amount of righteous, bloody destruction, you can hear their greatest battle tales here.

PUZZLES 145

If a tree falls over with no-one around to hear it, does it make a sound? How can you find out? And what does one hand clapping sound like? The answers to these eternally vexing questions are all to be found in our hand picked selection of enigma laden disks.

NEW RELEASES

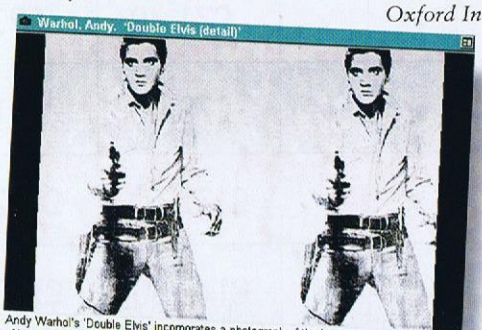
OXFORD INTERACTIVE ENCYCLOPAEDIA

£39.99 The Learning Company ☎ 0181 246 4000

The British multimedia encyclopaedia is a rare thing indeed. Intrepid **Gil Gillespie** has a pair of binoculars and a couple of questions about Tommy Steele.

NOTHING LIGHTS UP THE MULTIMEDIA fireworks of CD-ROM quite like an encyclopaedia. And yet, for all the vibrancy of *Encarta*, *Grolier* and their ilk, there still remains a shortage of British-born reference works. It's with an unfurling of the Union Jack then, that we must welcome *Oxford Interactive Encyclopaedia*.

Not only is it big enough and clever enough to be a serious contender but it's unashamed of its tri-coloured shorts. Housing the nine-volume *Oxford Illustrated Encyclopaedia*, the *Electronic Shorter Oxford dictionary*, the



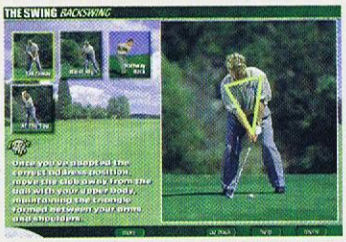
Andy Warhol's 'Double Elvis' incorporates a photograph of the legendary singer in one of his film roles. —*Andy Warhol, Seattle Art Museum/Corbis*

Photocopy a picture of Elvis a couple of times and call it art. Warhol had it *easy*, apparently.

HOT! CDs fresh from the pressing plant

Play Better Golf

£19.95 GSP Software ☎ 01480 496575



For the golfer it is the ultimate question: how, bearing in mind the need to work, eat and sleep, can you improve your game? Cheating is one option and this might well be another. Dividing the game into five key areas this is a watch-and-copy passport to a superior technique. Two of Britain's most respected club pros give 35 lessons, all of which rely on the on-screen pause and playback facilities. Patience and a will to succeed are needed and yes, it's better than video, but swinging a 9-iron around your living room does have it's limitations.

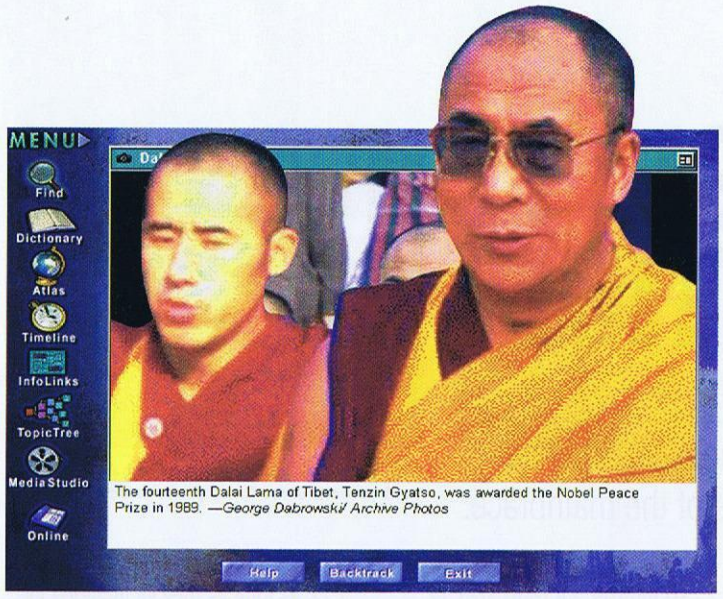
***PC FORMAT* Rating 68%**

Voyage in Japan

£29.99 Koch Media ☎ 01256 707767

We know it as the land where technology grows on trees, yet beneath the chaos of Japan's neon streets lies the a dynamic culture, ancient melting into new. Spanning several centuries, this journey uses over 600 colour photos, 50 minutes of narrative and a wealth of video, animation and music as it traces the traditions, beliefs and delicate spirituality that gives the nation it's identity. You'll find Samurai right through to Sony. Sadly there's no mention of Japan's vibrant teen-scene and nothing on Elvis impersonators.

***PC FORMAT* Rating 71%**



No matter whether you're into Dalai Lamas, or if you simply want to dally with llamas, the *Oxford Interactive Encyclopaedia* has the facts to sate your knowledge trawls.

Concise Oxford Thesaurus, the *Oxford Dictionary of the World* and the *Pocket Oxford Dictionary of Biography* this impressively weighty software is clearly capable of taking you from A-to-B via anywhere you please.

The first thing you notice is just how busy it is. True, the interface makes no attempt at 3D but it has its own simple energy. Drop menus fall open, back buttons twitch, evidence of hypertext linking is everywhere and if Earth gets too dull there's always the planetarium and the Internet.

Half-sizing the three menu screens enables you to work in several areas at the same time

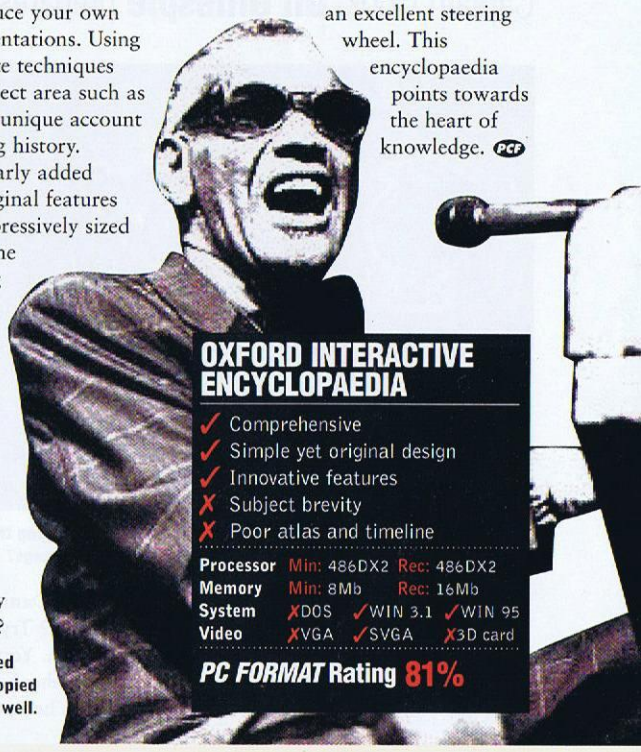
Half-sizing the three menu screens enables you to work in several areas at the same time. All journeys begin, as they so often do, with the search engine. Or should that be engines? The search methods that drive this encyclopaedia vary in power and can be used according to your needs. The most powerful scours the database like a hefty Dyson vacuum cleaner.

Impressive too is the range of articles, animations, maps, slideshows, videos, MIDI files and flags. These can be used in a number of ways: the Topic Tree breaks things up into areas such as the Arts or History, and each area boasts thousands of sub-areas. Then there's InfoLink: this is ideal for brainstorming topic areas. Enter a query for, say, the Sicilian Mafia and you find 117 articles ranging from related information on Italy, other organised crime rings and on film director Francis Ford Coppola. What may cause most excitement, though, is the multimedia studio. Here you can compile and link text, photos, video and sound to produce your own television-like presentations. Using simple cut-and-paste techniques you can take a subject area such as WW2 and create a unique account of events, re-writing history.

Oxford has clearly added some genuinely original features into an already impressively sized work. Yet despite the vastness, something is missing and that is depth. Okay, the information-guzzling nature of all encyclopaedias makes detail difficult, but too many of the entries here less than one paragraph. Is there any point in meeting a subject if you barely get an introduction?

The Atlas is almost child-like in its one-line detailing of the world. In order to drop in on New York you must parachute towards your target using a zoom feature and it has all the accuracy of a hot-air balloon. More shaky design haunts the Timeline Feature which sees significant events strewn messily along a horizontal gauge.

But lets not lose sight of the bigger picture: this title holds over 400 international contributions and travelling through it requires an excellent steering wheel. This encyclopaedia points towards the heart of knowledge. PCF



Before Jamiroquai copied Stevie Wonder, Stevie copied Ray Charles. But not as well.

OXFORD INTERACTIVE ENCYCLOPAEDIA

- ✓ Comprehensive
- ✓ Simple yet original design
- ✓ Innovative features
- ✗ Subject brevity
- ✗ Poor atlas and timeline

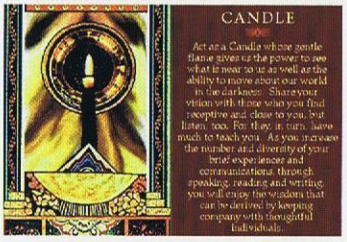
Processor	Min: 486DX2	Rec: 486DX2	
Memory	Min: 8Mb	Rec: 16Mb	
System	✗DOS	✓WIN 3.1	✓WIN 95
Video	✗VGA	✓SVGA	✗3D card

***PC FORMAT* Rating 81%**

SCORCHING! Discs that might just burst your thermometer

The Alchemist

£19.99 Interactive ☎ 0033 202 337 3657



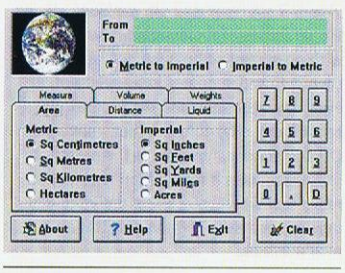
What is an Alchemist? A Primitive Psychologist? A nutter living in the woods? In ages dark and ancient the Alchemist was the wannabe-wizard you turned to when you needed answers. Today the same service is available on CD. Using the forces of nature, some rich new-age graphics and a half-decent search engine this oracle for the karmically confused requires you to ask questions about love, work and money, and then act on the answers of the Alchemist within. Pathway into spiritual re-awakenment? Nah, it's complete nonsense, Madam Zorba with a flatter crystal ball .

***PC FORMAT* Rating 57%**

Weights & Measures

£9.99 VCI Software ☎ 0171 470 6666

Surely the most thrilling name this side of Shed Seven, *Weights & Measures* could be a relative of that wood preserver in the TV advert. It does, you see, exactly what it says on the tin. Or in this case, what it says on the box. Several thousand light years away from VR technology this is a no-nonsense converter of inches, litres, acres, pints, volumes, kilograms and related areas. Use at home, in the office, or to impress your friends. Calculate the distance in centimetres between their house and B&Q. And then tell them the great news.



***PC FORMAT* Rating 56%**

NBA at 50

£24.99 EMME Interactive ☎ 01256 707767

What is the greatest sport of them all? Football (soccer, that is) or basketball? America insists it's the latter, and after watching this glorious dribble through the giant steps of NBA history it's hard to disagree. Packed with 90 minutes of video, two discs blend superb on-court action with extreme levels of statistical lunacy which will mean nothing to the average Joe, who maybe's just heard of Magic Johnson is. The greatest teams and players make for compulsive viewing, the name of the LA Lakers blocked-shots record holder is of less urgency.

***PC FORMAT* Rating 77%**

Eyewitness Encyclopaedia of Science 2

£39.99 Dorling Kindersley ☎ 0171 836 5411

When re-tuning this classic, Dorling Kindersley has gone for improvement over redesign. The strange interface has been polished and has even more chemi-crazy contraptions bolted to it's deep-wooden veneer. Inside there is growth. Over 1,000 new articles, 750,000 more words, 165 new scientists are profiled, a new quiz master with over 900 questions, more hot words, more links, more accessibility. Think of it as a car. It just added a spoiler, a new clutch and got a re-spray.

***PC FORMAT* Rating 88%**

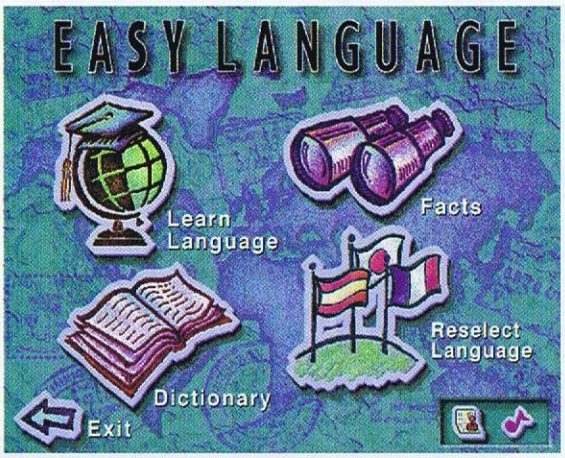
LANGUAGE

EASY LANGUAGE: 17 LANGUAGE EDITION

£39.99 IMSI ☎ 0181 581 2000

If this language program was a sailor, it would be almost certainly be Captain Cook. **Gil Gillespie** prepares multiple hoists of the mainbrace.

Pick a language, any language. As long as you don't want to speak Serbo-Croat, you're in luck.



Those enormous chunky icons look pretty, but are they suggesting that you need pictorial guidance to even understand your own language?

BEFORE LISA STANSFIELD SANG: "Been around the world and I-I-I-I," she should have got hold of a copy of *Easy Language*. Lisa's desperate search for her "baby" would have been more successful if she could speaka-da-lingo. *Easy Language 17* most certainly can, because this Goliath of a language program unsurprisingly contains no less than 17 major languages. You want to learn something useful? Try Dutch, Danish or Greek. You want exotic? Try Thai, Indonesian and Korean. You're applying for a job as a shepherd in Bethlehem? Hebrew is here, too.

Two CDs house 25,000 words and 2,250 phrases, all translated 17 times. Each language has its own pocket dictionary and every nation has a photo-video tour. But these are mere details, because the actual learning is centred around the now-obligatory speech-recognition technology. You listen, mimic and speak into the microphone – and your accent, pronunciation, tone and intonation are evaluated against native speech. Despite the techno-fizzing, it's good-old-fashioned practice that matters most. There are, it seems, no magic wands.

Say, say, say

Easy Language certainly takes learning into new territory, but sacrifices have inevitably been made. Much of the material lives on the Net, rather than the discs. Does this mean that anyone can sell any amount of language tuition on CD, as long as they've included an on-line link? If so, why not throw in Klingon and Esperanto, too?

It may be bursting out of its box, but this planet of words is not everything it seems. Anything with so many voices was bound to talk with a forked tongue. And anyway, nobody needs to learn this many languages. Apart from Lisa. PCF

EASY LANGUAGE

- ✓ Many diverse tongues
- ✓ The latest in voice gadgetry
- ✓ Easy to use
- ✗ On-line excesses
- ✗ Do you really need this many?

Processor	Min: 486SX	Rec: 486SX	
Memory	Min: 8Mb	Rec: 16Mb	
System	✗DOS	✓WIN 3.1	✓WIN 95
Video	✓VGA	✓SVGA	✗ 3D card

***PC FORMAT* Rating 81%**

TALK KING CDs that empower your enunciations with the Midas touch...

THINK AND TALK ITALIAN

£49.99 Learning Company ☎ 0181 246 4000

Designed to develop practical conversation skills in real-life situations *Think and Talk Italian* will enable you to shop at the supermarket and maybe even flirt with the checkout girls before you leave. The key here is your speech. Pronunciation is evaluated via the speech-recognition gauge and while it may seem rather dreary to listen-and-repeat, hearing your Italian accent improve drives you onwards. There are 50 lessons in all and 150 real-life situations. Perfect for two-weeks on The Riviera, but dangerously insufficient for business meetings in Sicily.

***PC FORMAT* Rating 64%**

EASY LANGUAGE CONVERSATIONAL SKILLS

£39.99 IMSI ☎ 0181 581 2000

With Europe losing it's walls, the ability to say "and now onto the business of blue-cheese quota limits" in French, German and Spanish could become essential. All three languages boast 90 lessons in basic vocab, pronunciation, grammar, sentence structure, reading and listening. After the basics you get-to-grips with the business of practicing dialogue. A practical workshop enables you to record and compare your voice with the tones of native speakers. You listen, you learn and you mis-pronounce.

***PC FORMAT* Rating 79%**

TRAVEL TALK FRENCH

£39.99 Learning Company ☎ 0181 246 4000

One-on-one French tutoring has two drawbacks. First, it's expensive and second, your teacher will laugh at your cooking skills. *Travel Talk* removes both problems. Using the structure of a classroom, you interact with on-screen tutors who pop up at every corner. Practice comes in a variety of everyday situations and the program is remarkably easy-to-use. What makes this CD so dynamic, however, is the personal presence. Speech recognition is somehow more real when you can actually see lips moving. Spanish, German and Italian are also available.

***PC FORMAT* Rating 83%**

TRANSPARENT LANGUAGE RUSSIAN NOW!

£49.99 Interactive Ideas ☎ 0181 805 1000

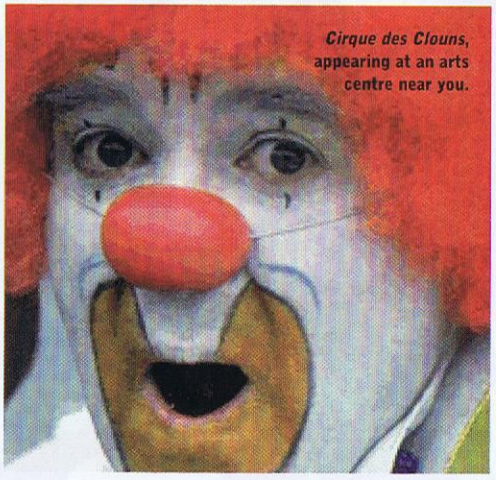
The title sounds like an order, but the approach encompasses all the openness of the collapsed iron curtain. Even so, one McDonald's doesn't make the place familiar. Helpfully, *Russian Now!* provides a tour through a cultural landscape old and new, before panicking you with its vocabulary. Basic words and phrases are slowly introduced in a no-pressure climate, until the first word is finally spat out. Immerse yourself in this diverse program and it'll make you proficient. Eventually.

***PC FORMAT* Rating 85%**

PRACTICE MAKES PERFECT FRENCH

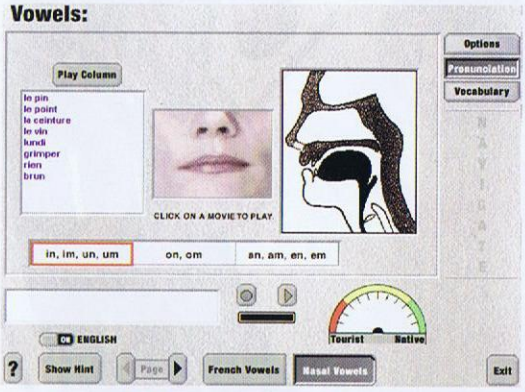
£29.99 The Learning Company ☎ 0181 246 4000

Forget *La plume de ma tante* – modern French lessons happen in the real world. **Gil Gillespie** makes small-talk in the abattoir, the elevator and the supermarket check-out queue. *Pas d'problem.*



Cirque des Clouns, appearing at an arts centre near you.

ONCE UPON A TIME, LEARNING TO *parlez-vous Français* consisted of nothing but the repetition of verb tables and the alphabetic chanting of nouns, tenses and pronouns. Those teachers have retired to Bournemouth and those days have thankfully gone. As Europe opens wide, communication is the key. It is a logic that states: if you can hold a conversation in a Parisian patisserie, you are far more likely to leave with a cake. Featuring over 2,300 everyday words from everyday streets, this unflashy but effective program covers vocabulary and pronunciation in terms of pure speech. By using colourful snapshots of ordinary French life, its intention is to familiarise you with the commonplace and the mundane. You're asked to repeat sentences, learn intonation, record your voice, play it back and then do it all over again. You observe peculiar animations of skeletal mouths as they make shapes to form words. You find that you never want to hear the phrase: "Can you tell me the way to the supermarket?" again. You will speak French – it's unavoidable (unless you choose the Spanish or German versions that are also available).



Perfect your glottal stops and bilabial fricatives, and your French will sound superb. Actually, forget about bilabial fricatives.

Lily pad vocab

Needless to say, after a while the whole process of watching, listening and repeating loses its thrill – but before you react like a driver on the Champs Elysées – remember exactly what it is you're doing. Learning a strange tongue is staggering difficult, notoriously slow and perhaps more tedious than getting stuck in a Channel ferry blockade. *Practice Makes Perfect* won't transform your British burr into the Gaelic-boom of Gérard Depardieu. It contains no games, no on-line link and no entertaining diversions. Pure *Français*, in fact. PCF

PMP FRENCH

- ✓ No-nonsense, all talk
- ✓ Simple to use
- ✓ Free of French *clichés*
- ✗ A little dull
- ✗ Inevitably slow learning process

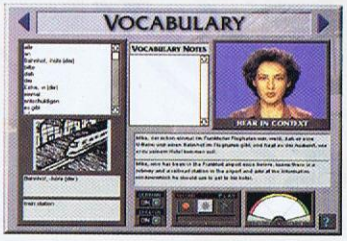
Processor	Min: 486	Rec: 486	
Memory	Min: 4Mb	Rec: 8Mb	
System	✗DOS	✓WIN 3.1	✓WIN 95
Video	✗VGA	✓SVGA	✗ 3D card

***PC FORMAT* Rating 71%**

SPEAK UP Indulge in bilingual tongue-play with confidence...

LEARN TO SPEAK GERMAN

£59.99 Learning Company ☎ 0181 246 4000



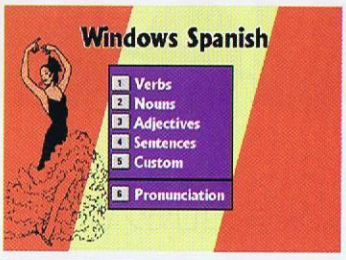
This is a complete course in German that develops reading, conversational and writing skills. 20 native Germans are enlisted to show you how it's done; there are extensive video and audio recordings; 30 chapters set in real situations, and more than an hour of German culture in QuickTime. But it's the high-quality speech recognition function that maximises learning to the full, so accent and pronunciation are finely tuned. Every interface bustles with say-it-hear it-read-it-and-picture-it options. Spanish and French editions are also available.

***PC FORMAT* Rating 81%**

MULTIMEDIA WINDOWS SPANISH

£9.99 VCI Software ☎ 0171 470 6666

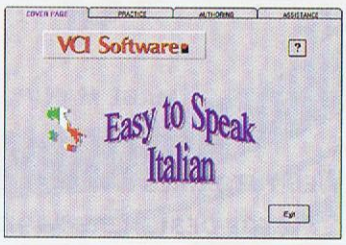
Aimed at Secondary School students, this rather primitive learning aid is as likely to hinder as it is to help. Over 1,000 words are segregated into tenses, verb conjunctions, nouns and adjectives as sentence translation is 'drilled' into you. Worse still are the graphs, reports and tests that seem to have escaped from a darker educational age. The French, German and Italian versions combine to give European language learning a bit of a pumping headache.



***PC FORMAT* Rating 32%**

EASY-TO-SPEAK ITALIAN

£9.99 VCI Software ☎ 0171 470 6666



Describing itself as an Interactive Audio Phrase Program, the Italian version of the four language series boasts voice recording facilities at a vastly reduced price. No, it can't recognise your voice – but you can listen to native speakers and record your efforts alongside. Cheapness does, though, have its price. The absence of anything visual means thrills are in short supply, you read and speak in a flat grey no-space. Still, 500 phrases are stored and topics cover areas such as shopping, business and restaurants. It can also be used in your CD player.

***PC FORMAT* Rating 57%**

LANGUAGE LABS ITALIAN

£19.99 Europress ☎ 01625 859333

The techniques in *Language Labs Italian* hail from the renowned Rosetta Stone method, in which everything is learned in the target language. The idea is to make you 'think' a language, rather than translate it from your own. You can choose from 12 different learning modes; check your vocal skill against the locals; your writing ability via dictation, and test your progress throughout. It aims for rapid success and suddenly, without warning, you'll find yourself saying things like: "Una bambino".

***PC FORMAT* Rating 68%**

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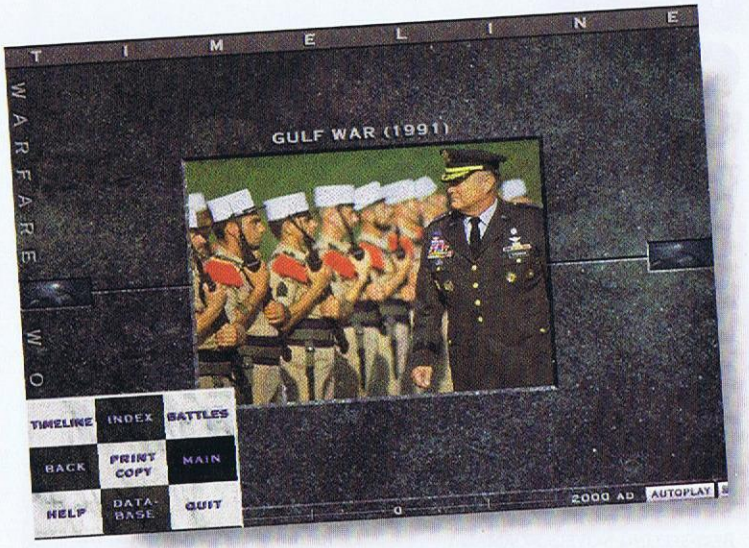
COMPLETE WITH DUAL-FORMAT CD-ROM

WAR

BATTLES OF THE WORLD

£24.99 The Learning Company ☎ 0181 246 4000

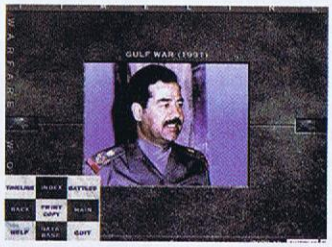
From sword-swishing in China to the technology of the Gulf War, big fights have pivotal places in history. **Gil Gillespie** lies down in the fields and plays dead.



Stormin' Norman inspects his troops, making sure to remember this little encounter for the first volume of his memoirs. War is hell, but an impatient publisher is worse.

GIVE WAR A CHANCE. APART FROM pleasures involving the flesh, and possibly fishing, mankind likes nothing better than a good war. There has, therefore, been some mighty battles and there has been some mightily stupid battles. (World War One, for instance, and let's not forget Vietnam. Now how stupid was that?)

Covering an impressive 4,000 years, this CD uses animation to re-enact 10 clashes of the Titans. Its brief is to expose the conditions that gave rise to war in the first place, identify the key figures, their strategies and tactics, and detail the weaponry used. It's a war strategist's dream and a pacifist's nightmare. Over 3,000 war articles are collected, there's more maps than an AA convention on the Falkland Islands and the use of video, sound, narration, animation and photography shows all corners of the multimedia jigsaw. Obviously the Gulf War of 1991 boasts considerably more video footage than the Battle of Gaugamela in 331BC.



Some people don't know when they're beaten. Saddam smirks at the USA.

On the downside, the animated sequences are flat, dated-looking affairs, but what purists will love is the detail, the technology shifting from sword to chemical gas and beyond and the opportunity to pile information on top of information. This disc's researchers weren't afraid of digging deep into history, just four of the 10 scraps are from this century. This makes it perfect for comparing Alexander the Great with Norman Schwarzopf, Julius Caesar with Hitler and so on. And rather than merely satisfying the hobbyists some bonuses have been thrown into the khaki think-tank. You can fly the Apache copter that knocked holes in Iraqi defences during the Gulf, see Smart Bombs in action, witness the terrifying thump of the Patriot Missile.

Granted, 10 battles in 4,000 years leaves many historical stones unturned but *Battles of the World* shoots straight at the heart of the most immense, most skillfully engineered and most breathtaking arguments in the history of the world. PCF

BATTLES OF THE WORLD

- ✓ Spans 4,000 years
- ✓ Uses multimedia well
- ✓ Detailed enough for obsessives
- ✗ Only 10 battles
- ✗ Poor animation

Processor	Min: 486DX33	Rec: 486DX33
Memory	Min: 8Mb	Rec: 16Mb
System	✗DOS ✓WIN 3.1	✓WIN 95
Video	✗VGA ✓SVGA	✗3D card

***PC FORMAT* Rating 71%**

FIGHT! Virtual punch-ups for you to take home and enjoy

War in the Pacific

£29.99 Flagtower ☎ 0171 393 3000

The war against Japan signalled the dawn of the nuclear age. The scope of the conflict, however, was far wider, and this brilliantly realised documentary draws the political, technical, media and personal sides of the war into focus. Making imaginative use of over 1,300 photos and unique film footage, both sides of the story are told with atmosphere and reverence. The definitive account of a conflict usually overshadowed by the fight against Germany, and worth looking out if you think that Hitler was all WW2 was about.

***PC FORMAT* Rating 88%**

Normandy: the Great Crusade

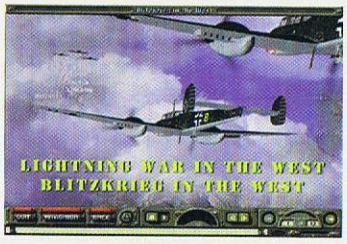
£19.99 BMG Interactive ☎ 0171 384 7500

The first sounds you hear are the air raid sirens, the crunch of boots and the choreographed horror of 10,000 'sieg heils'. This chronicle of the Operation codenamed Overlord is of TV documentary-quality. Dark, imposing narration is combined with boxed video and radio archive footage and the story of Eisenhower's finest hour unfolds much like it did 50-odd years ago. From political pondering to Hollywood starlets, it's a masterpiece.

***PC FORMAT* Rating 84%**

Air Combat World War 2

£34.99 Maris Multimedia ☎ 0171 488 1566



The refrain of *White Cliffs of Dover* might suggest a patriotic walk down memory lane but flag-waving isn't the intention here. *Air Combat* is about planes: British, Japanese, even German. Nine historic airbases house 27 classic 3-D models, there's 2,000 photos, two hours of video, info about weapons and nose art and six mini-flight sims that recreate the most famous air battles of the war. What this title lacks in atmosphere it makes up in detail. Comes in a double-CD package with *Wings – Midway to Hiroshima.*

***PC FORMAT* Rating 69%**

Air Assault – 'Nam to the Gulf

£34.99 Maris Multimedia ☎ 0171 488 1566

If you can stomach the thought of launching air attacks in Vietnam, the six mini-flight sims here have missile capabilities. As well as animated re-enactments of every conflict since WW2, you're given access to the technological make-up of over a thousand modern aircrafts, 4,000 photos and four hours of video. Fans of missile attacks can spend hours watching life being jigsawed into smithereens. Again, a 2CD package, *Wings – Korea to Vietnam.*

***PC FORMAT* Rating 71%**

PUZZLES

SOPHIE'S WORLD

£39.99 Macmillan ☎ 0171 881 8000

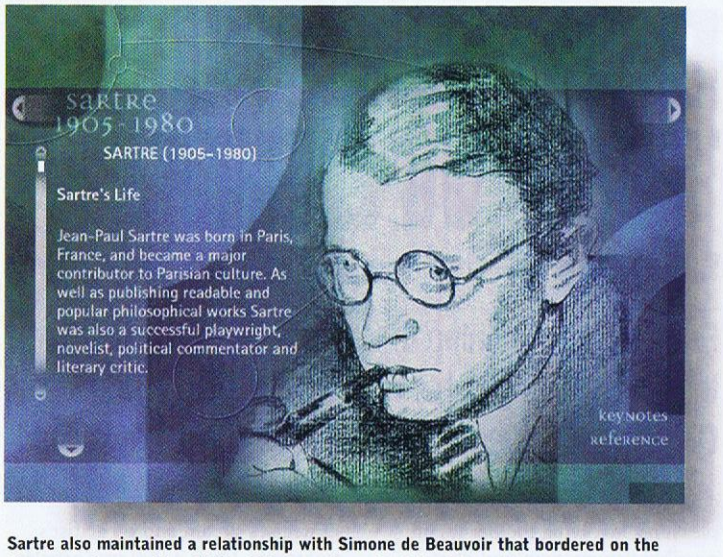
Philosophy? Novel? Cobalt blue? Philosophical **Gil Gillespie** reckons Jean-Paul Sartre got it right. Except for that strange incident with the lobster...

BEST-SELLING NOVELS NORMALLY contain sex, sleaze and shallowness in equal measures. They do not, as a rule, revolve around 3,000-year-old philosophical riddles. Or, for that matter, Norwegian schoolgirls. *Sophie's World* is no ordinary million-pounds seller.

If the novel was ambitious, the decision to translate it onto CD is of Everest proportions. And yet, by shifting away from the original plot towards a conventional history of philosophy, *Sophie's World* has triumphed again. The result is *The Outsider* (Colin Wilson) crossed with a few rounds of Trivial Pursuit. It's unique.

Sophie's World is also one of the only CD-ROMs to have a menu coloured cobalt blue. First, you drift into it's cool abyss, catching questions such as 'What Am I?' and 'Why am I here?' you point and click and look for an escape. The next thing you see is Socrates and the first step on a timeline that stretches from BC through to Sartre. Here lies the purpose of this CD: it's a beginner's guide to the history of philosophy and its significant figures. You can explore at will, but as you trace existentialism back to Hegel, locate it within a Marxian framework and label Darwin a creep you find yourself in the land of puzzles again, answering questions for your keep. This could be irritating except for the fact that the merging of these two worlds has been carefully considered. Besides, on its own, the philosophy would be too lightweight, it describes ideas but never debates them. It's down to the fluid little mind puzzles to open up new ways of seeing. PCF

Do you consider yourself enlightened? Read this and think again, you knuckle-dragging visigoth, you.



Sartre also maintained a relationship with Simone de Beauvoir that bordered on the bizarre, and penned Les Mains Sales, our favourite O-level French text. Crazy guy.

SOPHIE'S WORLD

- ✓ Unique CD from a unique book
- ✓ Superbly designed
- ✓ Interesting intro to philosophy
- ✗ Theories are not discussed
- ✗ Why stop at Sartre?

Processor	Min: 486DX2	Rec: Pentium	
Memory	Min: 8Mb	Rec: 16Mb	
System	✗DOS	✓WIN 3.1	✓WIN 95
Video	✗VGA	✓SVGA	✗3D card

***PC FORMAT* Rating 79%**

FUN FUN FUN Till your daddy takes the CD away

Pingu CD-ROM

£24.99 BBC Multimedia ☎ 0181 576 2866

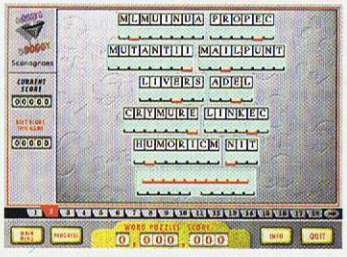
Along with Baby Clanger, Dill the Dog and Dick Dastardly's hench-hound, Muttley, Pingu makes genius out of irresponsibility. Even hidden behind 10 educational puzzles on this his first CD-ROM, the accidental anarchist of the Antarctic will not sit quietly in class. Just as he does on TV, he disrupts, flaps around and eventually visits Grandpa. The voice of an English narrator removes some of the Scandinavian surrealism and almost destroys Pingu's weird unintelligible charm, but Pingu's trademarks are left intact. For ages 3-6. Or anyone who still feels that age.

***PC FORMAT* Rating 78%**

Smart Games – Word Puzzles

£19.99 Macmillan ☎ 0171 881 8000

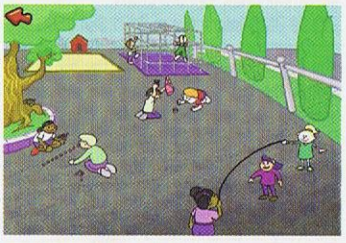
If *The Times* crossword was hijacked by the devil it would be something like this. Words melt, empty squares are confusingly filled, phrases need to be unscrambled in seconds, one game even asks you to create the puzzle as you solve it. This is a world beyond *Countdown*, an alphabet firing line with you against the wall. Each puzzle has up to 99 levels, and each level sees the puzzles twist tighter around your neck until you're a gibbering heap, your confidence in your command of English badly dented. It's advisable to avoid caffeine.



***PC FORMAT* Rating 67%**

Jump Ahead – Year One

£29.99 Random House ☎ 0171 973 9000



The fifth outing in the *Jump Ahead* series is aimed at developing the key skills for 5-6 year olds. Designed to suit the needs of the National Curriculum, *Year One* touches on 90 basic learning skills in the areas of maths, reading, writing, art and music. All activities take place in a wild and wacky school and the CD is hosted by Frankie, a talking dog. Children are encouraged to explore and engage in the 18 activities scattered around the classrooms. Games such as fun-reading, cash-counting and pizza-packing come with a likeable, laughable appeal.

***PC FORMAT* Rating 71%**

Multimedia Nursery

£9.99 Focus Multimedia ☎ 01889 570156

Would you trust your children's education to someone who wasn't sure of their own name? So what do you make of the *Multimedia Nursery*, AKA *Multimedia Kidnergarden* (sic), AKA *Farnsworth Ferret's Fun Pack for Kids?* With Crazy Eights thrown in as well? If first impressions are bad, then at least this title lives up to them with aplomb. The graphics are abysmal, little thought has gone into making the 'educational games' entertaining (*Maths Invaders?*), and we reckon that even less advanced kids will feel insulted.

***PC FORMAT* Rating 18%**

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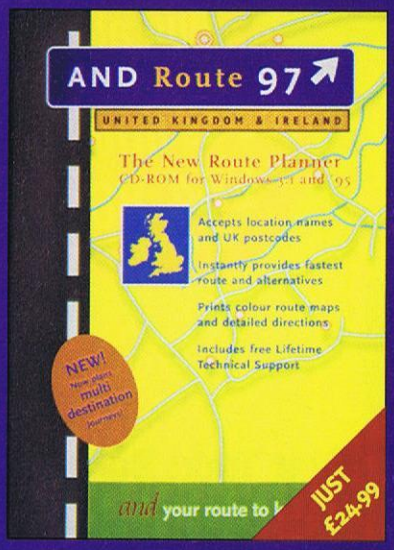

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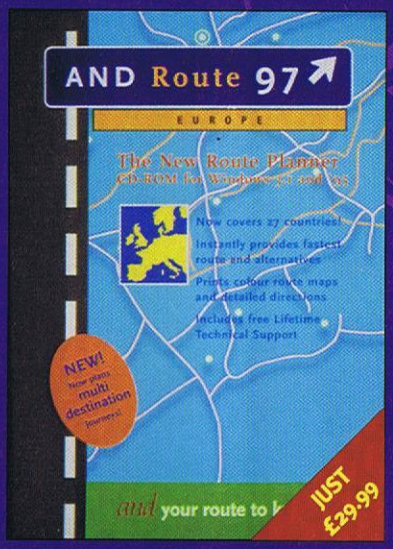

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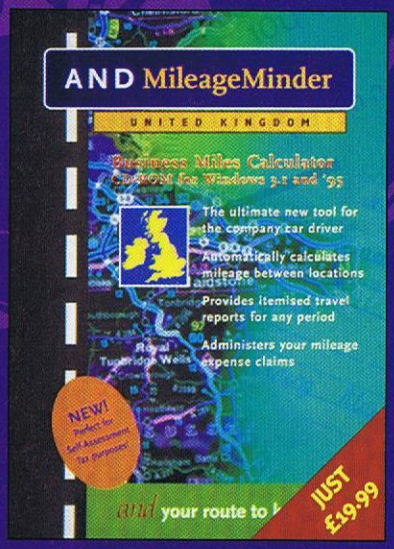

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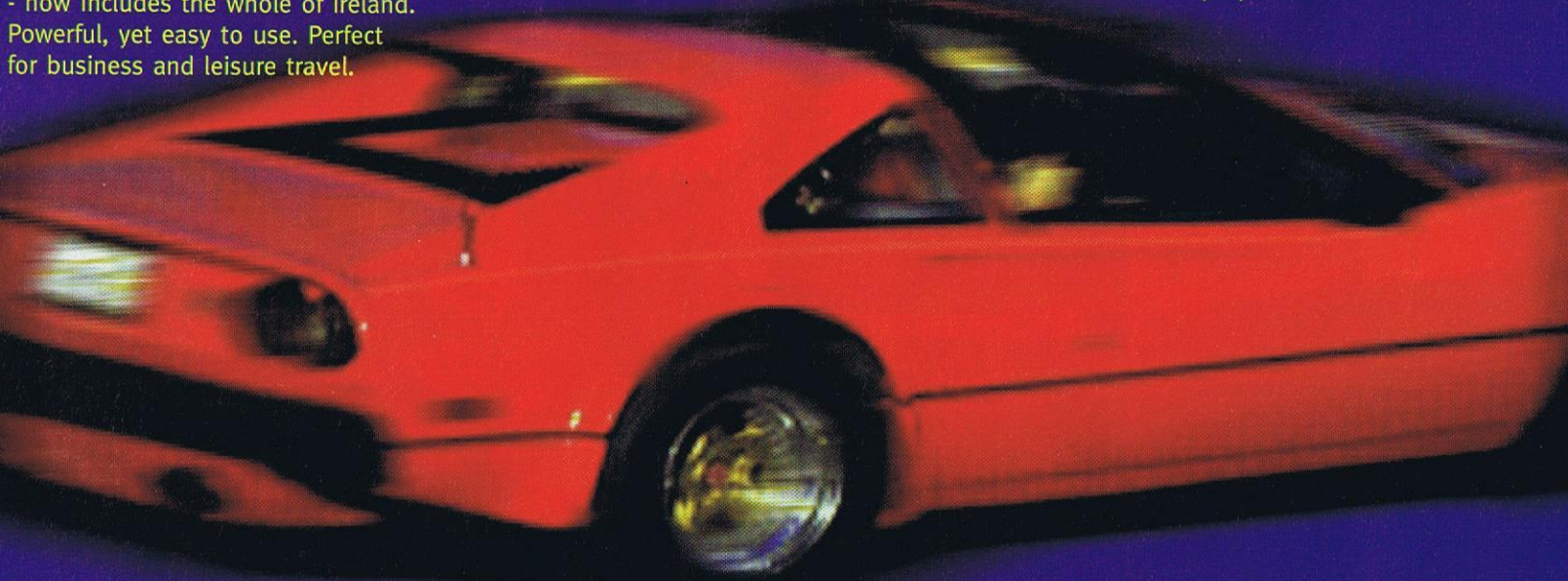

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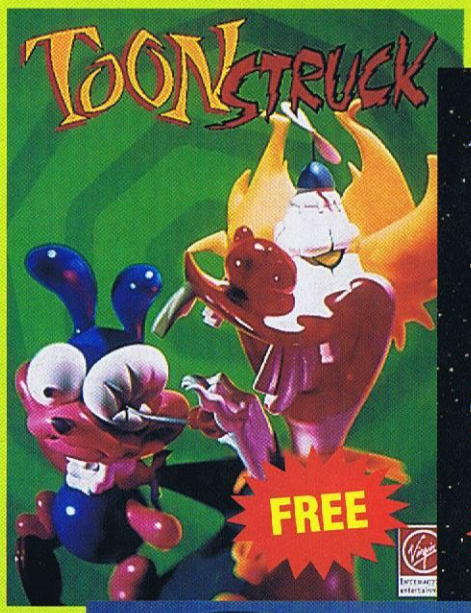
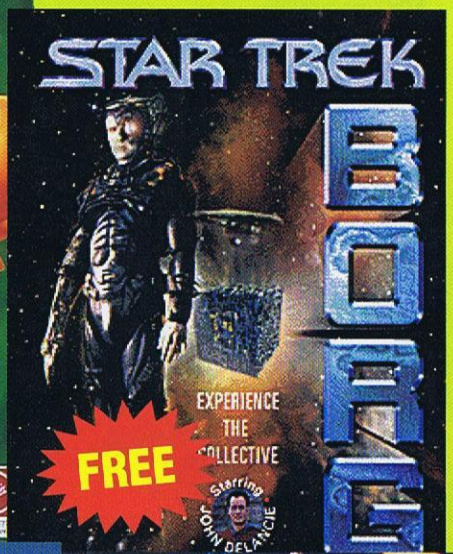
Toonstruck

RRP £44.99

The best adventure game on the PC? Well, if top-notch jokes, puzzles, and gorgeous cartoon graphics tickle your fancy, you'll have a whale of a time with this cartoon extravaganza.

PCF 90%





Star Trek: Borg

RRP £44.99

This giant wodge of *Star Trek* is stuffed with the highest quality video, sterling performances from Star Trek characters, more than a fair dose of playability, *and* the Borg.

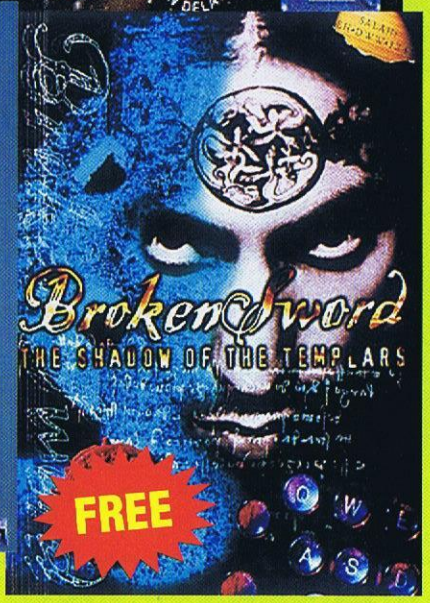
PCF 74%

Screamer 2

RRP £44.99

Everybody wants to drive fast cars with no concern for safety, but can never do it with as much style as in *Screamer 2*. Hugely exciting tracks and fantastic 3D make *Screamer 2* a winner.

PCF 80%



Broken Sword

RRP £44.99

A conspiracy stemming from the ancient order of the Knights Templar forms the basis of this adventure game. It looks sumptuous, and it plays even better.

PCF 90%

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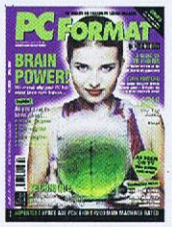

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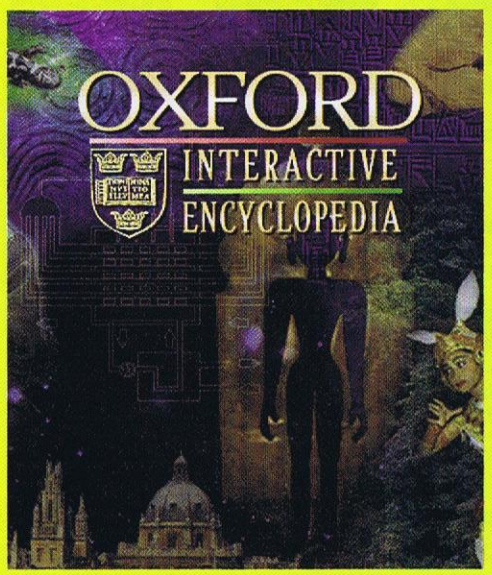

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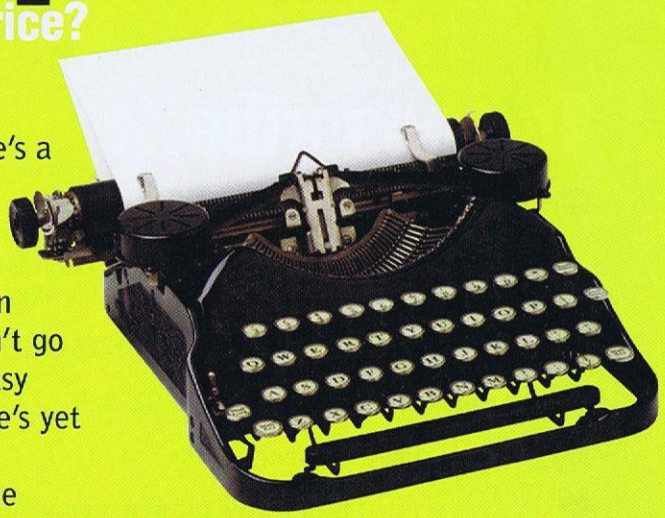

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AMD K5 166Mhz	15" .28 Dot Pitch	3.2Gb EIDE	16 Speed	£1,099 + VAT = £1,291.33	£1,179 + VAT = £1,385.33
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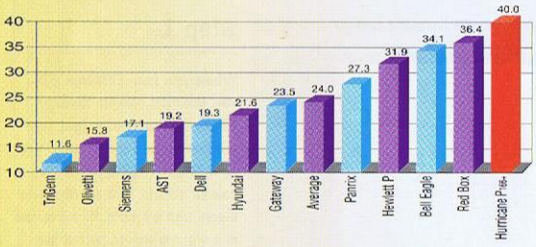
We are proud to offer the new Silica Hurricane PC range. As the name suggests, these machines have awesome speed and out power almost every other PC currently on the market. The price to performance ratio is stunning. You only have to look at the specifications to see for yourself.

PC MAGAZINE BENCHMARKS



In the September 96 issue, Ziff Davis UK PC Magazine tested 31 different P166 class PCs. The Graphics WinMark 96 test evaluates a PC's VGA performance. The AVERAGE performance of all 31 PCs was 24.0 - With the lowest at 11.6 - The highest was 36.4. The Hurricane P166+ Graphics WinMark 96 is 40.0 giving it a HIGHER performance than any of the 31 tested PCs.

The Winstone 32 v1.0 benchmark gives the OVERALL performance for a complete PC system. The Hurricane P166+ Performance of 98.0 is 19% faster than the average of all the 31 PCs which scored Winstone 82.5. The top performer was only 9% faster but at a retail price of £3,049 (inc Vat).

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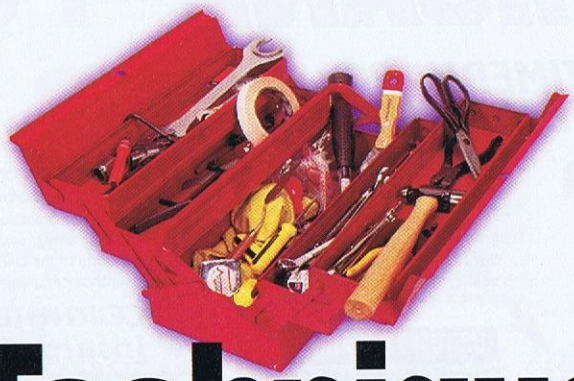
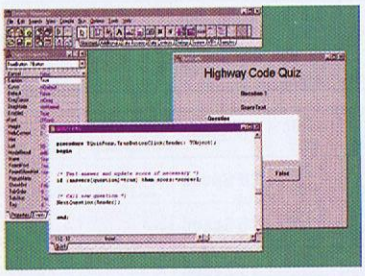


Technique

Make your PC earn its keep

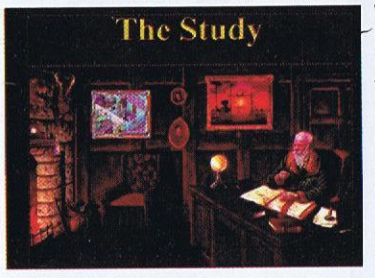
Your PC isn't just the best games machine on the planet. Oh no. It can do much more – and so can you. We show you how.

Extreme 3D.....150
Five hundred pounds-worth of 3D rendering software, and it's yours free! It's simple to use, but it's not easy to produce professional-quality models and animations. Unless, of course, you follow our six-month guide to the ins and outs of *Extreme 3D*, starting this month.



Delphi.....152
The only truly difficult thing about creating a fully interactive quiz program in *Delphi* is answering the questions. Still, if you make them up, you won't have that problem. We show you how to develop the best quiz game since Paul Daniels' seminal *Every Second Counts*.

Windows 95.....154
So many file types, so little time. Save yourself a celibacy-sized lump of frustration by associating those files with programs that deserve them. It's quick, easy, enjoyable – and doesn't involve spending any money. It's the best Windows tip in the world... ever (part seven).



Web site diary.....156
You may have the best Web site in the world – and if you've followed our tutorials, that's fairly likely (no, really). But how do you let people know about it? Learn from the Games Mansion's difficulties in the world of marketing, and make your site a hit. It's good to be clicked.

Mastering 3D graphics

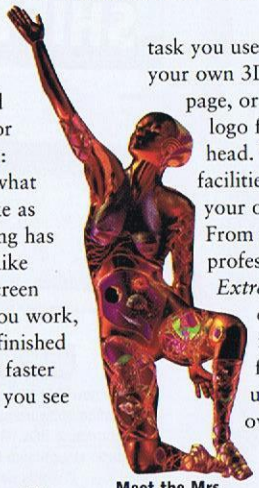
EXTREME 3D

Software by Macromedia ☎ 01344 458 600

Part **ONE**

Kicking off a series of *Extreme 3D* tutorials, we introduce this highly-powerful, user-friendly modelling and animation tool. Get loading.

FORGET ABOUT creating models and then waiting ages for them to appear on screen: *Extreme 3D* shows you what they are going to look like as you work. Image rendering has never been faster. But unlike other packages, the on-screen objects are rendered as you work, so you know what your finished image will look like. The faster your PC, the more detail you see as you work.



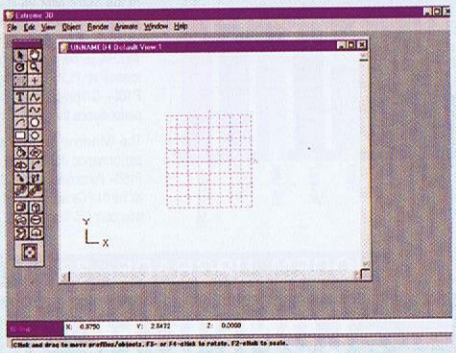
Meet the Mrs. Mrs Extreme 3D.

So, what makes *Extreme 3D* different?

Extreme 3D is invaluable to you, no matter what kind of graphics task you use your PC for. Create your own 3D text for your Web page, or design a new high-tech logo for your company letterhead. With built-in animation facilities, you could even render your own *Star Wars* sequel. From desktop publishing to professional illustration jobs, *Extreme 3D* shines. Although easy to use, this program is packed with advanced features: you can even set up animations to render over networks

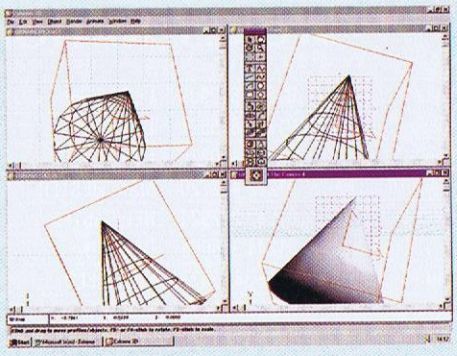
Extreme is different from (and faster than) other rendering packages because it's not a true ray-tracing program. However,

INTRODUCTION TO *EXTREME 3D* IMAGE RENDERING NIRVANA AWA



Step 1

When you run *Extreme 3D*, you see this simple display. There are currently just two windows open by default: the first is the toolbar, enabling you to create and manipulate views and objects. The second is a view window, providing you with the view you would see from an imaginary camera inside the 3D world. You can open several windows, each with different views.



Step 4

Let's create an object: click on the cone object and drag the mouse in the view window. You see the object appear in the view window. Adjust the views by going to the View menu and selecting Front, Back, Left and so on. The three-quarters view gives you a 3D view and the Four-View Setup option from the Window menu gives this display made of solid and wireframe views.

this doesn't mean that *Extreme 3D* can't create realistic images – because it can. But without ray-tracing, optical properties such as true reflection effects are not possible. The good news is that *Extreme* is capable of rendering an infinite variety of materials, beams of light, shadows – and can even add fog.

Image rendering has never been faster

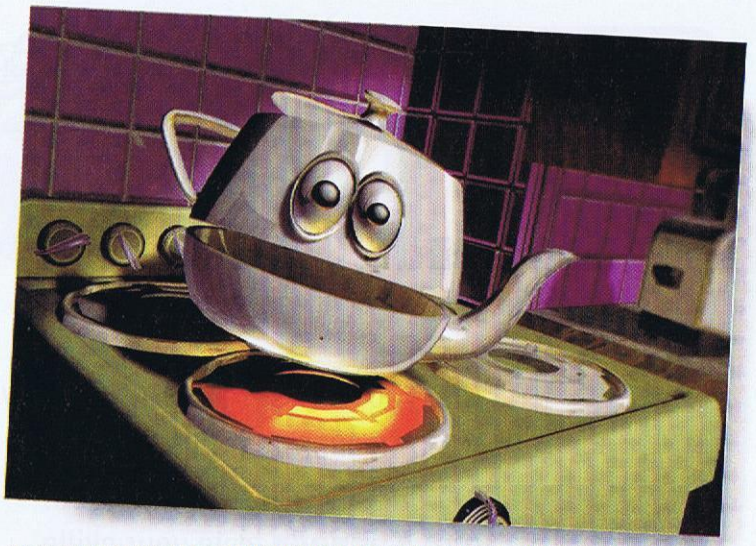
How does it work?

When you first run the program you see an intro screen which is blank, apart from a tool bar and a view window. This window provides the means of looking into the 3D world, and you open more windows to provide the required number of views. To start with, this world is devoid of any objects, and there's only an axis and a square pattern called the Working Plane.

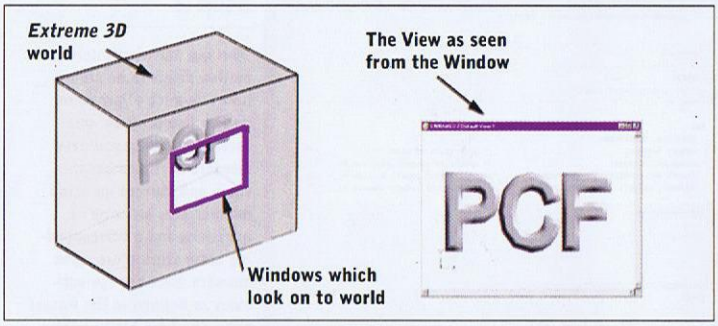
In order to create a scene, you load or create objects (including light sources and text objects), and then position them in the 3D world. You can adjust the size, rotation and position of the objects, and – most importantly – you can adjust your view. It's vital that you realise that you're able to change the positions of the objects, and the position of your camera. You can quickly change the view of your screen to be from the top or the bottom; from either side, or from a three-quarters view. As you work, your objects are displayed in solid form on the screen.

You can choose to display a lot of detail in the models, or a little, depending on your PC's speed. A Pentium-based PC should cope with displaying the objects in high detail, even in a complicated scene. As you may expect, every single object can be defined as being produced from one of a set of materials. You can select the colour of the materials, and alter a host of other attributes. You can also create a new material from an existing image.

When you're absolutely happy with the position and appearance of the objects you can render a final image. This image can be almost any size (up to 8,096 pixels square for professional-quality images), and contains any shadows or lighting effects present in the scene. You can also render directly to the screen, or save the image to disk in either BMP or TGA form. Once saved, the image can be loaded into a paint or DTP package, or converted for use in Web pages. If static images aren't good enough, you can create animations: every object can be moved over time, and renders a series of images, or an AVI ready for playback. PCF



Oh my God! If you wake up in the morning after a big night out and venture into your kitchen to witness this – be warned. You are drinking too much. It is time to say "No."



The view window provides you with a way of peeking into *Extreme 3D's* world. You can open multiple view windows, each of which has a different setting.

See page 12 for more tips and page 16 of Install and discover how to upgrade to version *2.0*.

SKILL LEVEL
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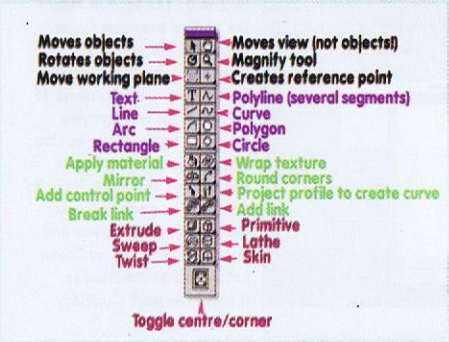
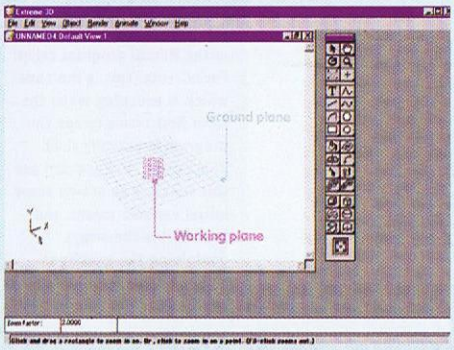
- MEDIUM
- EASY ✓



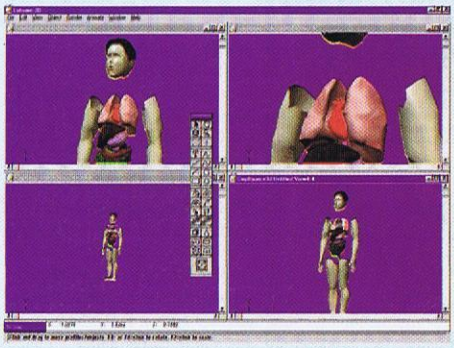
Step 2

The toolbar can be dragged and dropped anywhere on the screen. There are four banks of tools: move/edit tools, drawing tools, modifier tools and 3D geometry tools. If there is a dark notch in the corner of the tool, click and hold to see other options. If there is a light notch, double-click to open a settings window. For example, click the cone icon to reveal a sphere and cube icon.



Step 3

To start with, the main view contains nothing but the Working plane. This doesn't appear in your rendered scene, it's there to make it easier for you to create objects. No matter how you alter the view, the grid remains flat on to you (unless you switch it off in the Auto Working Plane **from the** Object **menu). From this menu, you can switch on the** Ground plane **to keep your bearings.**



Step 5

Look in the Goodies **drawer of the *Extreme 3D* CD-ROM. Pick the gory human figure from the anatomy directory, and load it (using** Open **from the** File **menu) into the app. Now experiment with the** Perspective **option from the** View **menu.** Orthographic **is the same as 'not perspective' and is useful for aligning objects accurately. Displayed here are some different views.**

Step 6

You can either render your final image to the screen or direct to disc. The render to disc option is useful if you want to create extra large images for the highest quality. From the Render **menu, you can switch on the fog (**Global Effects**), choose shadows (**Final Render set-up**), and choose the background colour or image. Select either** Render to Screen, **or** Render to Disk.

Home programming course

DELPHI

Programming language by Borland ☎ 01734 320022

Part **TWO**

Write your own professional-quality Windows apps with one of the best programming languages around. **John Kennedy** tests your skills.

OUR FIRST DELPHI APP IS A simple quiz program, which can easily be expanded to cover any topic you choose. The program displays a question to which you reply either True or False, and a running score is kept. The Delphi project is located on the cover CD, in a folder named **Delphi**.

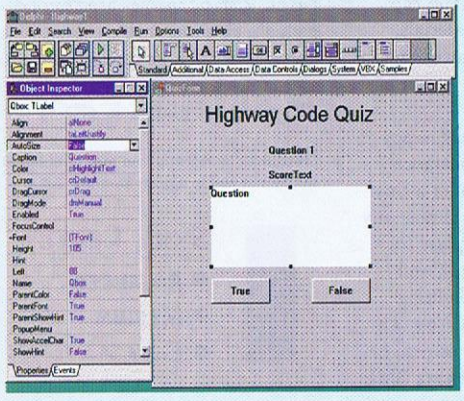
The source code is extensively documented, so it's well worth reading through. Delphi is based on Pascal, so you need to know how Pascal programs are written in order to create useful programs. There are many excellent books on the subject available, so check out your local library. If you have Internet access, check out: http://freepages.virgin.net/john.kennedy for further sources of information.

As we detailed last month, Delphi programs are Event Driven and react by calling sub-routines when something happens. In this case, the program reacts if you click on the True or False button. If neither button is selected, nothing happens until the program is terminated; your PC is switched off, or a giant comet destroys the planet's.

The low-down

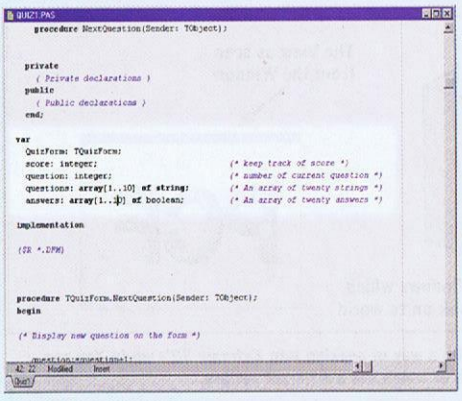
Here's a quick explanation of how the program works: the quiz form window is displayed on screen, as is an introductory message. In order to start, you must click on one of the two buttons. Clicking on either prompts the program to display a question, which you then reply to. Depending on which button is pressed, the score is incremented,

INTRODUCTION TO DELPHI PROGRAMMING A QUIZ



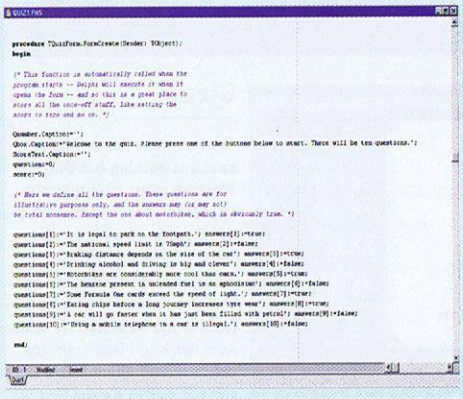
Step 1

To design this form, create two button objects (name them TrueButton, and FalseButton), and set their captions to be True and False. Add a large TextLabel called Qbox, and (after adjusting its colour to white) make sure that AutoSize is set to false to stop it shrinking to fit the text inside. Next, create three text objects: the title (adjust the font size), the Question Number, and the Score Counter.



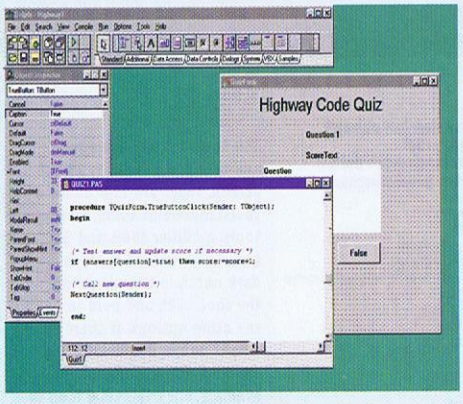
Step 2

Working out what information needs to be stored takes up a lot of program design. Our program has several variables: you need integers to remember the score and current question number, plus an array of questions and a corresponding array storing the right answers. Here are the variables as defined in the Pascal code. The type String holds text, while Boolean holds only True or False.



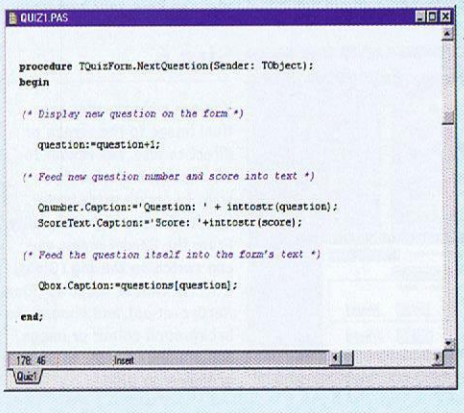
Step 3

If you double-click on a blank portion of the form, you're taken to a function in the Pascal program called FormCreate. This is the code which is executed when the form first opens (when the program is actually run). This means that you can use this function to set-up some initial variable values, and thus define the arrays containing the questions and answers required for your quiz.



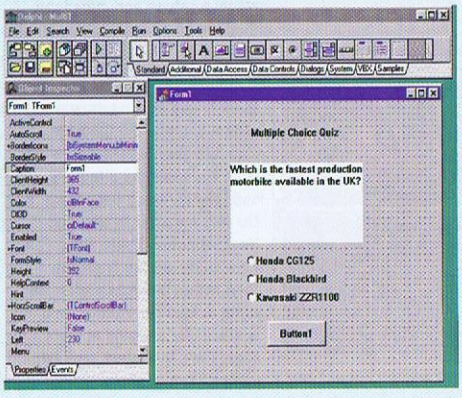
Step 4

Now double-click on the True button on the form. Again, the source program opens, and this time you're positioned at a function called TrueButtonClick. The name of the function is generated from the name of the button, which is why it's essential you change the name from its default. The code you enter here checks the answer and changes the score, and then calls another function to display the next question.



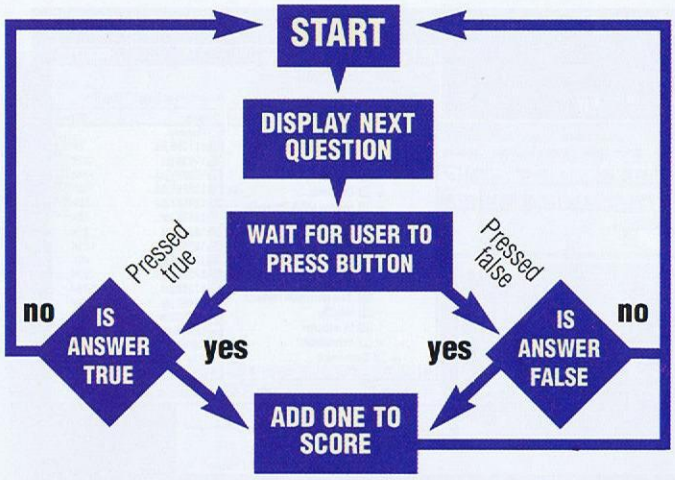
Step 5

Repeat the process for the False button. Next, write the function which updates the question number, retrieves the next question, and shows it on-screen. Displaying text in a window is easy, because you only need to change an attribute of the text object. So, set the Qbox.caption to become the text string which contains the question. Delphi automatically updates the screen and displays the text for you.



Step 6

The program is now more or less complete, so you can start to enhance it by providing extra questions. Alternatively, you can use the Radio Buttons to redesign it, and transform it into a multiple-choice type of quiz. When you add several Radio Buttons, Delphi only enables you to select one at a time – perfect for assigning possible answers to a question. Add another button for 'submit', and you're finally done.



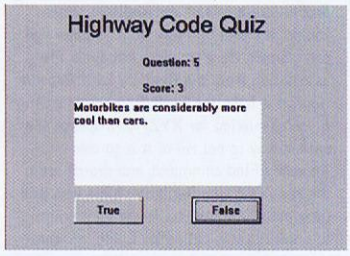
Our program hinges on whether you click on the True or False buttons. Each button has its own procedure, which can update the scores and then triggers the display of a new question. This repeats, cycling through all the questions one by one.

and the process repeats by displaying another question.

You therefore experience three possible events: the opening of the form, the click on the True button, and the click on the False button. Each of these events has a matching Pascal function, and you must create another function to look after displaying the questions and scores.

Drawing time

As with all Delphi applications, you begin by drawing the form that the program uses. The form is the window which contains all the text elements and buttons which you manipulate. Once these elements are defined, the program can alter various aspects. For example, a line of text can be changed to display a question.



Adding your own questions is easy: all you need to do is alter the source code. You will need to make sure you know the right answers yourself though!

It's important to name the elements you make as soon as you create them. The Name field can be found in the Object Inspector window, but why change the name from the default? Well, if you don't, you find you have dozens of procedures in your programs such as: Button1Click. or Button2Click. This soon becomes confusing. These procedures are produced by Delphi when you create a button, because it knows that you want the program to do something when the button is clicked on.

Delphi makes it easy for you to find and write this code – simply double-click on the button and you're taken to the right place in the source code.

This program includes three text items: the title, the score and the question number. The last two are updated automatically, and this is achieved by altering the caption attribute of the text object in question. Here's how it's done:

```
Qnumber.Caption:='
Question: ' + inttostr
(question);
```

The text object is called Qnumber, and the attribute you need to change is Caption. You define this (using the := symbol) to two text strings. The first string is the word Question:, and the second is constructed from the integer variable entitled question. The missing link is the IntToStr Pascal function, which takes an integer as a parameter and returns a string. As soon as this is executed, the on-screen text changes, to Question: 7, for example.

You store the questions and answers in two arrays. Arrays are 'super-variables', capable of storing multiple values which can be indexed as needed. So, the first question is stored in the array element question[1], and its associated answer is located in answers[1].

This is all there is to our simple Quiz program. For more details, look through the source code, and don't forget to add your own pertinent questions. PCF

Next month: we create an adventure program, which you can use as a basis for sharing your own text games with your friends.

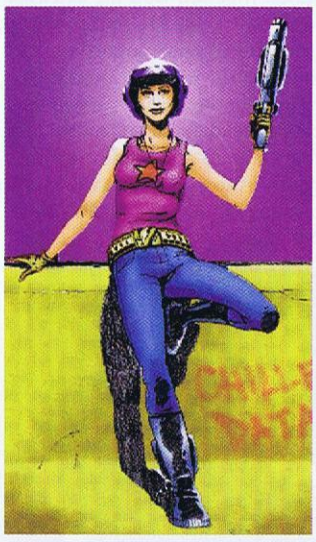
SKILL LEVEL
- ADVANCED ✓
- MEDIUM
- EASY

Your 15 minutes of fame

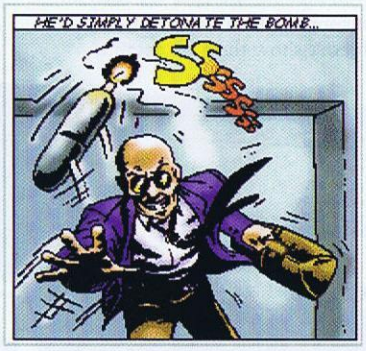
ART GALLERY

The gallery delves into the world of comics with **Wayne Grundy**, an amateur artist looking for a way into the industry. Could this be it?

WAYNE GRUNDY'S IMPRESSIVE WORK HAS SO FAR GONE UNNOTICED BY the comic industry, and he was hit by a bus on his way out of an industrial crayon shop (probably) but his luck recently changed when he bought the June issue of *PC FORMAT*. Not only did he read a fascinating feature on how PCs are revolutionising the comic business, but he also received *Colorize* on the cover CD – the ideal tool for colouring black and white comic artwork. Anyway, Wayne's stroke of luck continues, as we present his work for you to marvel at. And if you think you can do better, why not show it to us? We won't believe you otherwise.



1 This image shows a different style to his other strips – appearing more like a character from *2000AD* than the slightly simpler style of the other stories. The pic was coloured using *Photoshop* – a harder task than using *Colorize*, but one with which Wayne is obviously a little more experienced.



2 Here's a panel from a short comic entitled *Imagine if...* The plot is nothing to write home about, but Mr Grundy is probably more interested in the art-side than the writing aspect of comic production (maybe he should try animating other people's short stories?). This was drawn with pen and ink, and then coloured with *Colorize*.

3 Another one of Wayne's strips is based on the *Little Red Riding Hood* fairy story, with a modern twist. This version reveals how Wayne colours sections with basic colours (using *Colorize's* edge painting tool), and adds lighter colours to give a sense of depth.

"WHEN WILL I, WILL I BE FAMOUS?" LET US HELP YOU...

Now it's your turn. Not only do we want to see your PC-related artistic endeavours, but we also want to know how you did it. Send your finished artwork, along with a five-step work-in-progress guide and screenshots. Tell us which packages you used and about any special techniques you employed. Send your contributions on a floppy (large files can be compressed by saving them as a .JPG file) to:
Art Gallery, *PC FORMAT*, Future Publishing, 30 Monmouth Street, Bath BA1 2BW.

We're also interested to hear about your other creative pursuits. For example, send us a five-step guide on how you produced your fanzine. Or what about that multimedia project you had to undertake for your degree course? We want to see it!

Get the most out of Windows 95

WINDOWS 95

Operating system by Microsoft ☎ 0345 002000

Part SEVEN

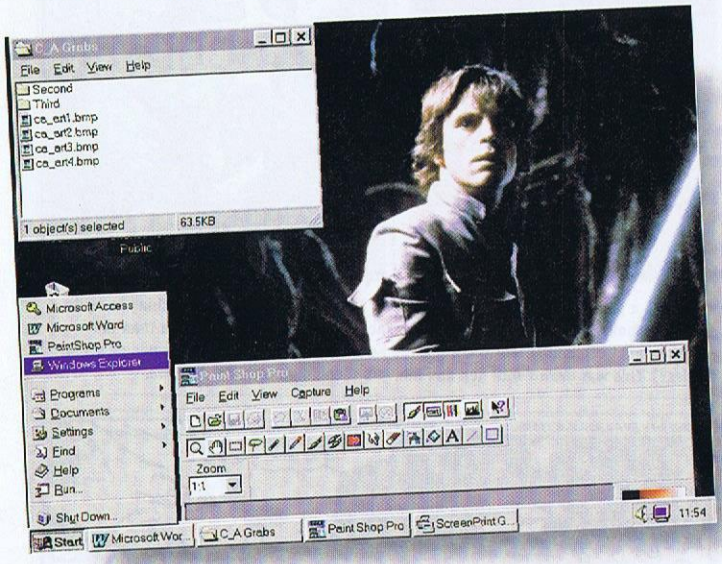
Launch programs and open documents in Windows 95 the easy way, with file association. **Steve Patient** takes control...

When using large programs such as *Photoshop* you can set the file association for most graphics file to a smaller, faster program, speeding up space on your operating system.

WINDOWS 95 IS BUILT ON THE smouldering foundations of DOS. One of the holdovers from this is the filetype – those three letters after the dot in a filename. Windows 95 uses the filetype for file associations, and these tell the operating system which application to launch in order to edit or view a file. It also determines the icon used to represent a file. However, because filetypes are such an uncool historical holdover, Win 95 doesn't show them by default.

In order to see them, you have to go to Explorer's View menu (or double-click My Computer), select Options, and untick the box which states: Hide MS-DOS file extensions for filetypes that are registered. So, let's look at registration: Win 95 keeps all the information it needs to keep in the Registry – two files called user.dat and system.dat. The first contains all the information pertinent to you, the other includes information about your PC. It's here that you find all the file associations listed. You can look at the Registry with Regedit.exe. – but don't fiddle.

File registration is great, most of the time. It basically means that Win 95 seems to know what to do when you click on a file. However, it can be abused, because some apps simply take over whole collections of filetypes without so much as a by-your-leave. You find clicking a file suddenly starts a different (and unwelcome) program – so the you need to know how to change file associations. We'll start with an easy one: notepad isn't too successful with large text files, and has few features to consider.



Learn the tricks of Windows 95 file association and teach your PC to understand when you want to launch image or text files only and whether to Open, Print or Close a file.

TECHNICAL BUSINESS

There are times when nothing else will do, and you have to edit the Registry. When you do, it's best to know what you can and can't break. Here's how to remove a file association from the Registry with *Regedit* (launch it from the Start/Run command): if you're looking for XYZ, for instance, the easiest way to get rid of it is to use *Regedit's* Find command, and search for the key .XYZ (the Registry stores keys and their values) When you locate it, it points at another entry called XYZ_file, or whatever it's named. Delete the XYZ key, and search for the XYZ_file key. This points at whatever program is currently set to open files of type XYZ. Delete this key, and hey presto! No more association...

Changing associates

Let's assume you want to associate text files with a better editor, such as the shareware *TextPad*. To change a file association, open Explorer (or double-click My Computer), and select Options from the View menu. Then select the File Types tab. What you see here is a list of all the registered filetypes, so look down the list for the Notepad icon with the words Text Document next to it. It sometimes takes a little detective work to find the entry you want. Now, select it, click on both the Edit button and the Edit button on the next dialog box, and then change the path and program name to the one you want. You can use the Browse button to make this even easier – as you hit OK and close these dialog boxes, you see the icon change to reflect the new file association. When you click on a TXT file, the new program loads it instead of Notepad. Simple.

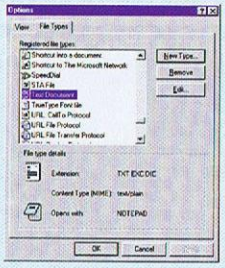
Well, not quite, because even NotePad is actually associated with several different filetypes. Now they all open in *TextPad*. But what if you want to change just one? For example, if you have *Paint Shop Pro* installed, you see Paint Shop Pro Image is associated with more than a dozen filetypes. You can scroll through them by clicking on the list and using the cursor keys.

Let's say you want to associate JPG files with *Internet Explorer*. It's a lot of fuss, because you can't associate a file with two programs or remove one filetype from the list. So, the first step is to make a note of the actions associated with each

TROUBLESHOOTING FOR BEGINNERS

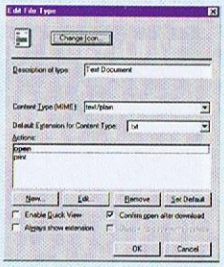
Step 1

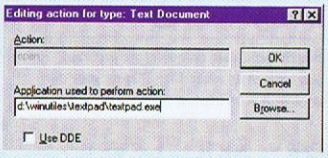
You can change file associations and create or remove them from the View/Options menu in Explorer or My Computer.



Step 2

Here you're about to change the file association for TXT files, open them in an editor with a few more features.



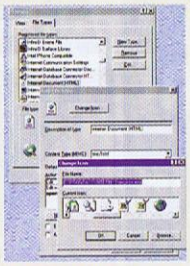


Step 3

Now simply change the entry to the program you want to use for text files. In this case, it's a programmer's editor.

CHANGING AN ASSOCIATED FILE'S ICONS

Some icons (particularly when shown in miniature in Explorer's **List** view), can be hard to tell apart – but then again, some are boring or just plain ugly. Fortunately, it's a straightforward job to change the icon used to show a particular file association. Go to **Options** on the **View** menu, and select **File Types**; then find the one you want to change, and select it by clicking it once. Now, click on the **Edit** button, and a new window appears. This window shows the icons available within the application currently associated with the file type you've chosen. Many applications contain a variety of unused icons, but you don't have to use one of those on offer. Hit the **Browse** button and look into any executable file (EXE) – or any DLL or ICO file – and select whatever you please. Interestingly, you can make changes here to icons you can't change in the normal way. Try it.



It's easy to alter the icon used to show which files are associated with which applications.

file type – usually Open, Print and DDE commands. Delete all the file associations from the app. Finally, you have to re-associate each file type with the app you want to load, and set up the actions again.

Learning without damage

The best way to learn to do this without breaking anything is to create a new filetype: copy a TXT file and rename it to test.xyz. Open the **File Types** page and click on **New Type**. Then fill in the fields.

For the action you want when you click on the file, use the **Add** button. Open; Print or Play an AVI video file for example, but not a DOC file. Tell Windows which program to use. In this case, we're going to open the xyz file using NotePad. Enter the path to Notepad, enclosing it in speech marks if it contains spaces or long file names. (You can also find it using **Browse**). Finally, close down all the dialogs.

File association is simple, but you should err on the side of caution by creating a new filetype.

You now find double-clicking on the file with XYZ filetype opens it in NotePad, whereas TXT files open in *TextPad* (or whatever is specified). This technique gives *you* control over how Windows 95 handles files.

Separation by default

File associations can also be used to differentiate between various kinds of file usage. For example, if you use a program such as *Photoshop* for image-editing, you might prefer to set the file association for most graphic files to a smaller, faster program such as *LView*. This speeds up your system and Win 95 does less swapping to disk, when all you want to do is check a file/image.

One off-the-wall use is to create a new filetype, and rename files you only want to open in a specific application. If you have a collection of reference documents you only want to read, and not edit – you could put them all in the same folder, rename them to .REFERENCE (filetypes can be more than three characters long under Windows 95), and associate them with a fast file viewer rather than an editor. Changing filetypes has another consequence, because it can make them more secure. If a filetype has no association, then someone has to know which program can open the files they refer to, before anything can be done with them. This is why Win 95 warns you if you're about to change the filetype. Finally, unless you have Win 95 set to show filetypes, odd things happen when you try to change them. For instance, a file called stuff.doc would be listed as stuff. If you rename it to stuff.txt, what happens is that the name changes to stuff.txt.doc, because Windows 95 preserves the hidden filetype and doesn't care about extra periods in a file name. This means double-clicking it still opens it in whatever application is associated with DOC files. Not a lot of people know that...

Next month: we look at the uses of the Windows 95 reigstry and how you can make it your own.

SKILL LEVEL

- ADVANCED
- MEDIUM ✓
- EASY

10 things you need to know about

DOS BOXES

Complete GUIDE

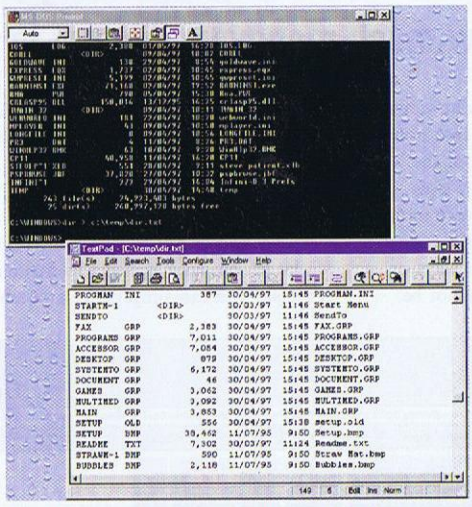
These boxes do things Explorer simply cannot – such as producing helpful file listings.

1. Running DOS

There are two ways to run DOS programs from within Win 95: inside a DOS box, or in MS-DOS mode. The first runs your DOS program alongside your Windows applications. The second closes Windows 95, and runs just the DOS program.

2. Devices working

In a DOS box, all the devices (including network connections) under Windows work. In MS-DOS mode, only those devices with a 16-bit driver loaded from Config.sys work.



Using DOS in conjunction with Windows 95 enables you to carry out certain tasks that Win 95 can't achieve alone.

3. Alter fonts

You can change the font used in DOS boxes from the **Toolbar**, or from the **Properties** option on the **System** menu. You can use System fonts (bit-mapped), or TrueType fonts.

4. Multiple boxes

You can have several DOS boxes running at once, but each takes up to 1Mb of memory (which Windows 95 can't swap out to disk). This reduces the efficiency of Windows 95.

5. Save file listings

If you want to save a file listing, you need a DOS box. Open it, change to the relevant directory, and type:

```
dir > c:\temp\dir.txt
```

6. Text lines

From the **Screen** tab in **Properties**, you can set a DOS window to run with 25, 43 or 50 text lines.

7. Create shortcuts

You can create several shortcuts to command.com (in \windows\command), and set each to open in a different way.

8. Graphics programs

Although the manual claims you can run graphics programs in a windowed DOS box, it's only possible if the program makes no direct calls to the graphics card. In practice, most graphical DOS programs freeze in a window and only run full screen.

9. DOS box icon

The default DOS box icon isn't particularly exciting. If you run DOS programs from shortcuts, you can change it to something you prefer.

10. Copy from DOS

You can copy information from a DOS window, and paste it into a Windows application. Use the toolbar marquee button to select it, and the double page icon to copy it.

Design your own Web site

DIARY OF A WEB SITE

Games Mansion http://www.gamesmansions.com

Part **FIVE**

Learn the art of self-promotion and overcome the problems of downloads – **Andy Hutchinson** opens the doors to his mansion...

Should you manage to be chosen as a Cool Site of the Day, you're virtually assured a massive increase in your hit rates. Even embryos will want to shake their funky booty in front of you.

YOU MIGHT BE SURPRISED BY the number of people who regularly browse the Web if you're new to the whole Internet scene. In recent months, the amount of people getting on the Web has exploded to the point where the big sites get as many as two million visitors a month. It can't be long, surely, before certain sites get as many visitors as some popular television shows get regular viewers.

The main trouble is that now everybody wants a piece of the action. Thousands of new sites appear on the Internet every month, many of which have been designed just to make money – the days of the fanzine-style site may not be numbered, but they're most certainly getting swamped by the commercial variety. That kind of pressure means that absolutely everyone's looking for promotion, whether it's via a plug; an advertisement in a different medium (have you noticed the URLs that grace so many TV adverts these days?), or on another site altogether.

Getting a site promoted these days follows one of two routes, depending entirely on how much money you've got to spend

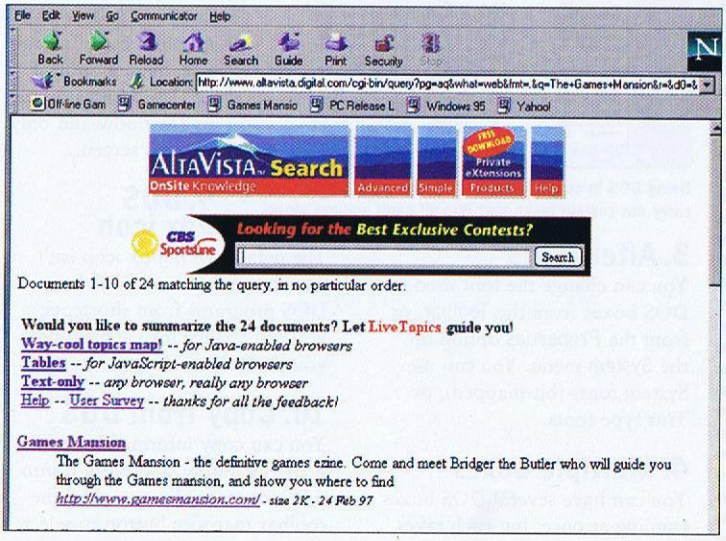
Getting a site promoted these days follows one of two routes, depending entirely on how much money you've got to spend. If you're a large company wanting to make a splash, you can simply hire a hotshot design agency, call in a professional advertising company, and buy your way to on-line success. Everyone else (and that includes the boys and girls at the Games Mansion) has to take their chances with good reviews, links from other sites, and awards. So, it's all one hell of a gamble.

Seek, and ye shall find

There are a myriad of ways in which you can find out about a particular site. You can type a search expression into a search engine, and find your pride and joy listed among the 15 million other sites. You can visit it by simply clicking onto a link from someone else's recommended sites page. You can hear about it from a friend. You can read about in a magazine article. You can click on an on-line advert.

To start the traffic rolling into our site, we hit all of the big search engines and added our URL to the lists. Depending upon the site, it can take as long as two months before your URL actually appears, so it's worth doing this well ahead of your launch. Search engines such as Yahoo! rely entirely on Web masters entering details into a submission form on the site; while others such as Alta Vista go out and find sites by visiting everything on the WWW.

We actually submitted our URL to Yahoo! in December 1996, and it finally appeared in the list of games-related sites in April of this year. We can't blame Yahoo! for this delay, because it must be snowed under with new URLs (each of which needs to be checked out and then added).



Serious search engines such as Alta Vista are useful because they include details of individual pages at your Web site. We found three interesting pages of listings for the Games Mansion.

DOWNLOAD DISASTER

One of the main reasons you browse the Web is because there's a hell of a lot of good software out there – be it demos, trial programs or shareware. The Game's Mansion has a shareware section in which it includes the better-looking demos, but there are also all sorts of things to beware of if you're contemplating doing the same thing.

First, demos expire quite quickly, and you have to check every day to see that your links are still valid. Second, do you have the right to actually include the software on your site? Copyrights and trademarks are easily infringed. Third, if you're including the software on your server, can you cope with the volume of traffic? Downloads attract many people.

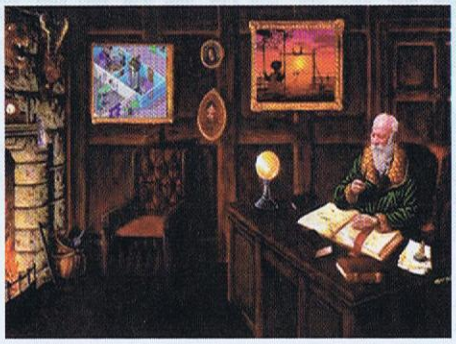
In order to get picked up by sites such as Alta Vista, you have to use a different approach.

The big search engines such as Infoseek or Alta Vista use programs called spiders, which crawl the Web looking for new sites and reporting back. In order to get picked up by a spider you have to add keywords to your pages using the 'Meta' tag – this adds words to a page which your readers can't see, but which search engines pick up. To use it, add this line to your HTML: `<meta name="keywords">` and add key words such as '`review`', '`PC`' or '`game`' between the quotes.

Winning award

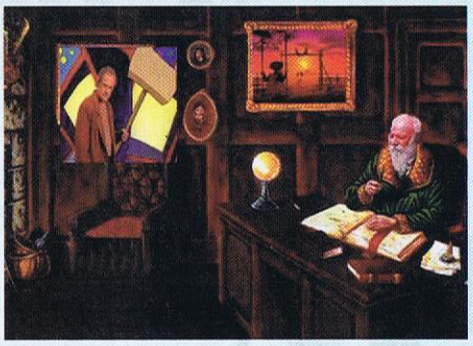
Contrary to what you might think, browsers are creatures of habit. Watch the top 100 Web sites listing (http://www.hot100.com) and you find it actually changes very little. In other words, once the user finds a site they like, they bookmark it and then return to it on their regular

DESIGN TIME HALF-A-DOZEN STEPS TO CREATING THE PERFECT IMAGE MAP...



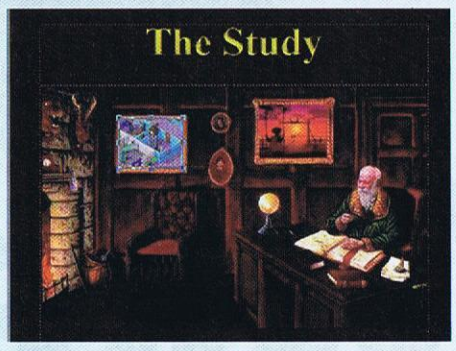
Step 1

For the purposes of this tutorial, we're using *FrontPage 97* – although most current HTML editors include a simple Image Map facility that works along the same lines. The first step is to design your image. In our case, this is a picture of the Mansion's study – our review archive.



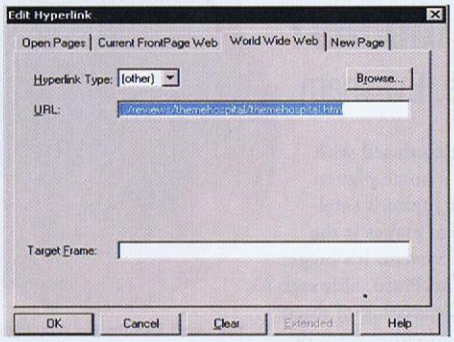
Step 2

We had our image specially drawn for us to include a number of specific clickable locations. The most obvious are the two paintings on the wall – but the book, his Lordship and the lamp can also be used. They look more interesting, but for now, let's begin with one of the paintings on the wall.



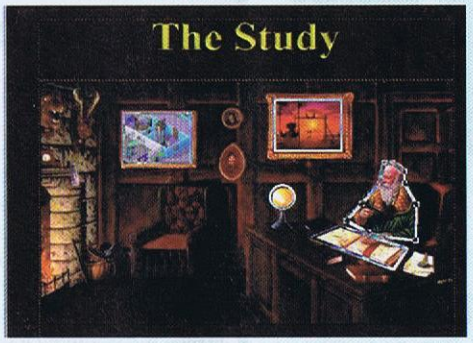
Step 3

We've opened the image in *Photoshop* and dropped two cropped screenshots onto it. Select the image by clicking on it once and then choose the Rectangular tool from the Image Toolbar. Click and drag a rectangular shape around the picture. Sounds easy – and it's as simple as that.



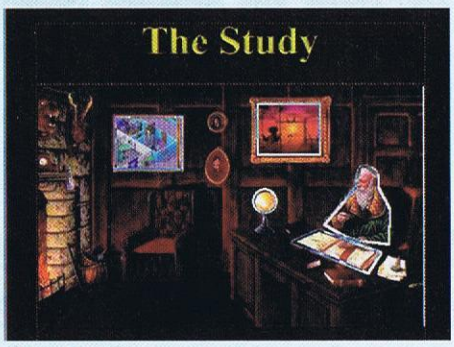
Step 4

We now need to define the URL for this hotspot. Click once on the hotspot to make it active, and then hit [Alt] + [Enter] to open the properties box. Now simply enter the URL, relative or otherwise, of the page you want to link to. We can now repeat this for the second image.



Step 5

His Lordship's a funny shape, so we've used the Polygonal tool to draw around him. There's no need to be too accurate when you're doing this, because we're only looking for a broadly clickable area. This is all that's required for it to work. We can repeat the process for the lamp and the book.



Step 6

Finally, here's the finished Image Map, in place within *FrontPage 97*. When viewed in a browser, none of our lines will be visible; the user will be able to simply push their mouse pointer over the image and zip off to another URL with a click of the button. It's easy when you know how.

forays into the Web. It's getting onto the bookmark list itself that's the tricky bit.

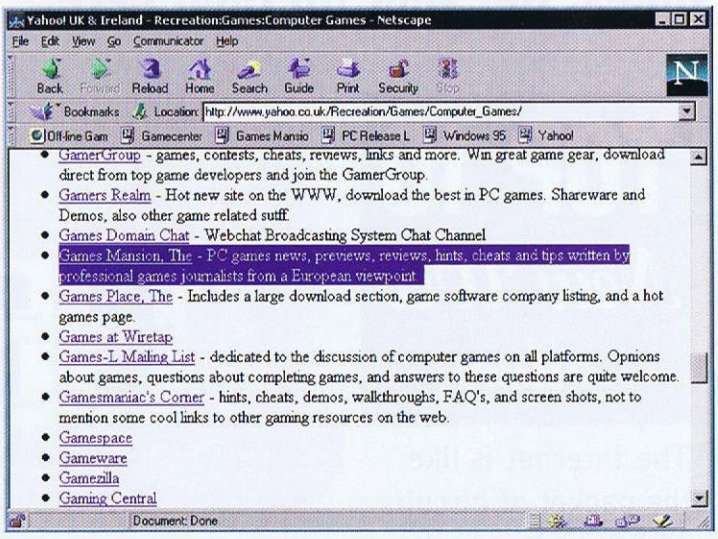
One popular traffic builder is the Web award. These days there are literally hundreds of awards sites – ranging from Cool Site of the Day, to Reader Recommendations. Get picked up by just one of these and you're virtually guaranteed a boost in your traffic. For instance, the Cool Site of the Day (http://cool.infi.net) can point as many as half a million new readers in your direction. We visited as many of these sites as we could find and added our URL to their database of newbies. Thus far, we've won four awards, including two Cool Site of the Day awards.

Inevitably, of course (and similar to many situations), your success or failure definitely relies on perpetual, tireless self-promotion and word of mouth. In our registration form, readers tell us how they found out about the site. Initially, many of them mentioned *PC FORMAT* or Yahoo!, but lately most of them say that a friend told them about it.

Fundamentally, the only way to succeed is to keep plugging away. Veteran Web designers will tell you that they enter the URL of their sites into search and link sites on a weekly basis – hassle people for long enough and you usually get that all-important plug. But if and when you hit the big time, you'd better hope you have a server that can effectively cope with the traffic. Otherwise, you may regret the day you decided to open up the floodgates. PCF

Success or failure definitely relies on perpetual, tireless, self-promotion and word of mouth

Next month: in the final part of our diary we analyse the painful lessons learned so far, dissect the successes, and see what the future holds...



The list of games-related sites in Yahoo! is a long one. In order to get clicked on, make sure you include a good plug line when you submit the URL. If you don't, you won't get clicked.

NAVIGATION BY IMAGE MAP

One of the most useful navigation aids in HTML is the Image Map. An Image Map is an ordinary image file (GIF or JPG) with pre-defined 'hotspots' – clicking on a hotspot activates a brand new URL.

SKILL LEVEL

- ADVANCED
- MEDIUM ✓
- EASY

Wired World

The Net is too great a monolith to be the reserve of any one man. Its mysteries should be shared among the masses in bite-sized, information-packed slices. Get your fill right here.

Challenge McCauley

Pull on your virtual pith helmet, as everyone's favourite big-hearted Netsplorer once again cuts a swathe through the electronic jungle.

Which is the biggest of Jupiter's moons?

Geriant Camborne, Evesham

You won't find Doctor Who living here. He's just a pretend.

IT'S GANYMEDE. NOT to be confused with Gallifrey, which is Dr Who's home planet; Ganymede is the seventh of Jupiter's satellites. Its diameter of 5,262km makes it the largest satellite in the Solar System. It's bigger than the planets Mercury and Pluto, although it's only half Mercury's mass. Consisting of three layers, it has a molten core of either iron, or iron and sulphur, surrounded by a silicate mantle, topped off with a shell of ice. There's also evidence that Ganymede has a thin oxygen atmosphere, but there's no suggestion that it supports, or is capable of supporting any forms of life. Most interesting is a surface consisting of grooves and ridges of a tectonic nature, which makes Ganymede a lot more similar to Earth than either Venus or Mars. All in all it seems an interesting place to be. Find out more and see for yourself at http://seds.lpl.arizona.edu/nineplanets/nineplanets/ganymede.html.

TOP 10 New Web sites

The Internet is like the packet of biscuits which we have with our afternoon tea. We sort out the Hob-Nobs from the Jesus-shaped cookies.

SITE OF THE MONTH

PATRICIA PICCININI

http://www.artoz.com/drome/piccinini.html

Pink. Patricia Piccinini likes pink. You can tell this immediately because the on-line gallery of her best artwork is uniformly decked-out in some fairly horrendous colours, most notably the aforementioned pink. The site may be an aesthetic atrocity, but most of her pictures are really rather attractive. Patricia uses a host of top-notch graphical tools to create these, and this site gives you a rough idea how she achieves her effects (and a fair idea of how good she is at talking complete nonsense about her doodles). Check out her work and you might just be inspired...

NO.2

STAR JOURNEY

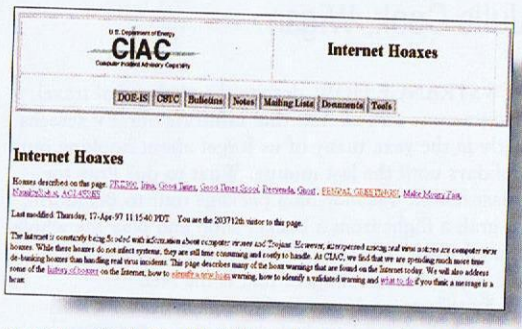
http://www.nationalgeographic.com/modules/stars/

As possibly the best astronomy site we've ever seen, this National Geographic-backed site oozes class. The presentation is superb, the updates surprisingly fast, and the content second to none. Change to the star map, choose a sector of the sky and zoom in to a detailed map, showing constellations and areas of interest. Click on one of these, and a page appears with pictures of the area from the Hubble Space Telescope, as well as information on activity in that area. We can't understand why they don't charge for you looking at this.

I've been warned about the Penpal Greetings e-mail virus that wipes your hard disk. What can I do about it?

Steven Pollock, Barnsley

THE BEST THING you can do is buy the best anti-virus program you can lay your hands on, as well as some detergent, DDT and a comfy chair. Install the program to be on the safe side, throw the detergent and DDT away (but not in a river, eh?), and then settle back and relax. For once and for all, we'd like to state that there is no such thing as the Penpal Greetings virus (see Helpline for Luis' opinion). It's a hoax, a variant on the Good Times virus. A virus cannot be spread in e-mail, unless it's enclosed in an attached file. In which case you've no-one to blame but yourself if you go running programs that have been sent to you unsolicited. Pay a visit to: http://ciac.llnl.gov/ciac/CIACHoaxes.html, where the US Department of Energy tells all.



Right, then. So that's settled. The next very person to warn us about an e-mail virus is in *serious* trouble. And we mean that.

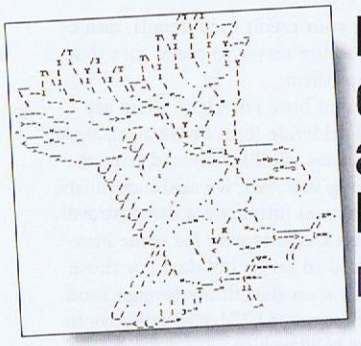
I need to get a train from Derby to Reading next Tuesday, to get me there around 3pm.

John Whitby, Derby

3PM, YOU SAY? It's going to be a bit of a hike. You need to get the 11.43 from Derby, which gets you into Birmingham New Street at 12.26. It has a buffet, so you can grab yourself something to eat while you're waiting 40 minutes for the 13.06, which will get you to Reading at 14.54 – making a total journey time of three hours and 11 minutes (probably an hour and a half slower than by car). The latter train also has a buffet, but it's a bit busy so you might want to make a reservation. How do we know all this? We paid a visit to the Railtrack Web site, which is a spectacle decked-out in green and sepia. The only possible use for it is checking train times. You find it at: http://www.railtrack.co.uk/travel/, but do be aware that all times are subject to alteration, and connections cannot be guaranteed.

My Net connection is too slow to deal with graphics. How can I view attractive pictures without waiting hours for them to download?

Dennis Menlove, London



Displayed through the marvels of ASCII art, it's a... A bird? A tree? A cake?

THE SUCCESS OF the WWW has made the inclusion of lots of pretty on-line graphics a must for any Web site. However, if you're stuck with a slow connection – either through a heinously outdated modem or a sub-standard ISP – you can waste half of your on-line life sitting around waiting while a 100K picture loads at 60 bytes per second. However, an alternative to complicated GIFs and JPGs has existed for years, ever since the days when the Internet was a plain old text-based behemoth. Good old-fashioned ASCII art has long been used to brighten-up pages and postings, and there are some impressive examples around that load in no time at all, because ASCII pictures consist of text. Take a look at the gallery of ASCII art at http://gfg.com/chazz/dollar.txt, and gasp at its 80s beauty.

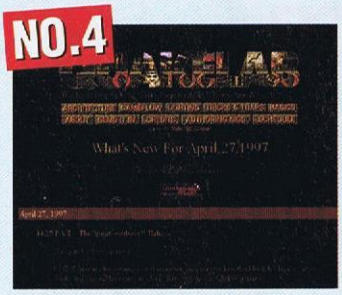
NO.3

TOP GEAR

http://www.topgear.com/

There's no interactive version of Jeremy Clarkson's haircut yet, but every other aspect of *Top Gear* has its place on this set of well-designed, information-packed pages. In many ways, it's just an on-line supplement covering the same areas as the program. However, the news feed will be of interest if you're a gear head with your finger on the pulse. The site is sufficiently fast, attractive and interesting to warrant a visit from any vehicle owner, especially one with a propensity for emphasising the last the words *of every sentence*.

NO.4



QUAKELAB

http://207.230.228.198/stevefu/quakelab/

Will *Quake* ever lose its appeal? Not until *Quake 2*, at least. In the meantime, the life of this classic game can be infinitely expanded by downloading new levels. Or, if you're already spending too much time on the Internet, you could create your own levels with the massive and rapidly expanding selection of tools and utilities available on the Quakelab. Hints and advice are littered around with gay abandon, and there's something here for beginners and experts alike. This is as grand a niche site as we've ever seen.

NO.5

COW TIPPING THE VRML WAY

http://www.digitalo.com/vrml/cowtip.html

Cow tipping is fast becoming a major underground sport in the USA. As the name suggests, all that's involved is walking up to a cow and pushing it over. We don't recommend doing this, however, because not only is it unpleasant for the cow concerned, but it's also unsafe for the tipper. Should the bull notice you bothering his herd, he doesn't even need to ask you to step outside (because you already are). He will therefore cause you pain, quickly. Try tipping a virtual cow over, or spinning it on its head. As much fun as the real thing, and less smelly.

NO.6

REM GUITAR ARCHIVE

http://bubblegum.uark.edu/REM/

REM have produced some extremely good material over the years, and Robert Cray has listened to it all. He's worked out the guitar tablature, and made it available for your benefit. Every album is detailed, from *Chronic Town* to the criminally undersold *New Adventures in Hi-Fi*. Maybe your band is thinking of covering an REM song to break up the mindless indie-rock, or possibly just wants to steal some excellent chord progressions. Whatever your reasons, if you want to know what REM are playing, look no further.

Can you find me the sheet music for the *Flower Duet*, from Delibe's *Lakme?*

Hugh Tate, via e-mail

SHEET MUSIC DOESN'T adapt well to the Net, because you can't store it in text or HTML format. There is a proposal doing the rounds for an ASCII notation standard – but to get sheet music at the moment, you have to download it in some exotic file format such as PostScript or Acrobat. This is such a complicated business that there's not much of it available for download. But you could try: ftp://ftp.gmd.de/music/scores/scores.html, which is an on-line sheet music repository (but didn't have any Delibe when we looked). You might have to pay real money for your score, using a company such as Sheet Music On-line (http://www.sheetmusic1.com/), or perhaps even Sheet-Music.Com (http://www.sheet-music.com/).

I forgot to book my summer holiday this year, and it's getting a bit late. What should I do?

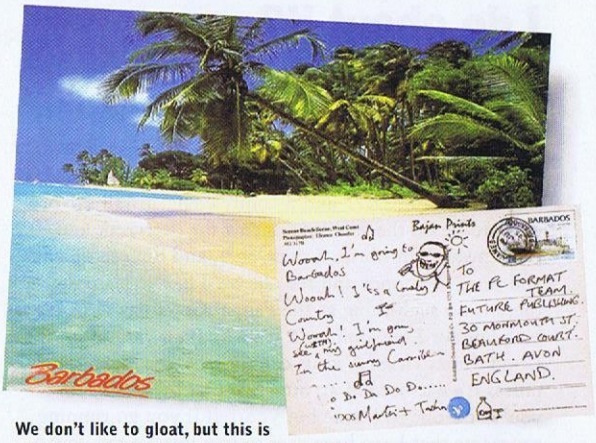
Julie Cook, Wigan

IT'S STRANGE HOW, despite the plethora of travel programmes and adverts that infiltrate our TV screens early in the year, many of us forget about booking our holidays until the last minute. What to do? Pray for a last-minute vacancy on a package tour to Benidorm, or grab a flight from a bucket shop and play the whole thing by ear? The sensible thing to do is venture into the enormous travel agent that is the Net.

Funnily enough, none of the major travel chains has a Web site although there is a Lunn Poly site of sorts at: http://www.travelbank.demon.co.uk/, but it's unofficial, concentrating more on publicising the evil underbelly of said company.

So, it seems you're better off with one of the smaller, friendlier travel agents, and the Net has them in spades, catering for just about any holiday you choose. If you want to avoid the whole palaver of leafing through brochures and trekking into town to book your trip, you find that there are some sites that enable you to do the whole thing on-line. Lamerton's World Travel (http://www.lamertons.co.uk/) is one, with an enormous travel index for you to browse through. Pick where you want to go, which operator you want to take you there, and then click on the Book button to set the whole deal up. If you're concerned about airing your credit card details, don't be – Lamertons uses a secure server to make sure that no-one else can intercept them.

Holiday in the jungle, with the added danger of getting eaten.



We don't like to gloat, but this is Jim's favourite holiday spot. Oh, all right then, we do like to gloat.

If ordinary trips abroad bore you rigid, there are alternatives: Wildlife Worldwide (http://www.tecc.co.uk/bbs/ww/index.htm) organises wildlife-oriented trips to suit the naturalists among you. No, we said naturalists, not naturists. Campus Travel (http://www.campustravel.co.uk/) deals with all you students who for some inexplicable reason can afford to go on holiday. For those of you who simply don't trust that funny foreign food, there's an enormous selection of UK-based holidays to be found at: http://www.holidayuk.co.uk/.

But finally, if you want to know where we'd rather be, take a look at Jim's favourite destination – Sandy Beach in Barbados (http://www.world-traveler.com/barbados/images/sandyc.jpg/). See you there?

Oh yeah? Think you can come up with a tougher question, do you? If there are any morsels of fact that you simply *have* to know, jot them down and send them in to Jim at the usual address. Or, of course, you can e-mail them to him at jmccauley@futurenet.co.uk, but if you have e-mail then you probably don't need our Jim's help and perhaps you can find out for yourself...

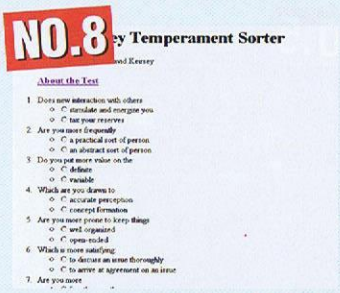
NO.7

JALAPENO CAFÉ

http://www.azstarnet.com/~coriel/

The Jalapeno chilli pepper is the perfect way to add comedy value to any meal. Pop a bit of chilli into the other guy's meal and watch as he sweats, cries and rushes to the water closet. Or, alternatively, use the chilli pepper wisely, and create delicious, only slightly mouth-burning recipes with the minimum of fuss. The Jalapeno Café contains a suite of recipes devised to sport the Jalapeno at its burning best. What's more, you can't stick the pages together with chilli sauce, because they're in a different country.

NO.8

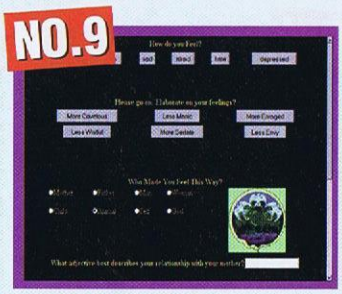


KEIRSEY TEMPERAMENT SORTER

http://www.keirsey.com/cgi-bin/keirsey/newkts.cgi

Mr Keirsey is a computer expert with an interest in the psychological theories of Carl Jung. And he has a dodgy moustache. The Temperament Sorter is one of Mr Keirsey's pet projects – a simple questionnaire designed to identify your personality as one of the four main groups identified by Jung – Artisan, Realist, Idealist or Guardian. Filling in the questionnaire and pressing the button is all you need to do, but the information about this four-class theory on the linked pages is even more interesting.

NO.9



SHRINK IN A BOX

http://www.dreamwv.com/shrink/shrink.html

This shrunken shrink (or 'analyst') could prove to be a massive saving for the criminally stupid. Instead of listening to someone who's even more bonkers than you rattling on about how your parents screwed you up and you'll never forgive them, just log on to the Shrink in a Box and have your anxieties analysed for free. The Shrink asks you how you feel, and how you would describe your relationship with your mother, before returning with a solution for your worries. And boy, does it work! Well, not that we have any conclusive proof.

NO.10

LONGINES

http://www.longines.com

As we write this, the Longines site doesn't actually exist, so it's possibly a little premature to include it in our Top Ten. However, by the time you read this it should be fully functional, and we feel you should know about it. To launch the site, Longines is creating a VRML flight simulator, enabling you to fly Charles Lindbergh's plane on-line. You can fly it anywhere you want, as long as you phone bill can take the strain. As far as we know, this is the most useful application of VRML yet. Let's hope it sets a precedent.

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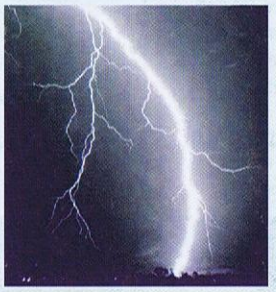
What's on

As The Undertones once declared: here comes the summer. **Gil Gillespie** smiles at the weather, grabs the outdoor games compendium and razors the roof off his car.

EXTREME WEATHER

Droughts in April, hot summers, floods, typhoons, supersonic winds. What the Michael-flipping-Fish is going on with Britain's weather? In less than 30 years, we've gone from mild breezes on the riverbank, to the annual removal of every roof-tile in the country. Terrible weather has never been so terrible. *Twister* gave bad weather a reasonably good name, and the pool of WWW sites devoted to the skies present an equally convincing argument for staying indoors. The storm stories make you shudder and shake, because the whole world, even our tiny island, is no longer safe.



Ouch. Now that's gonna hurt. Might be bad for the hair, too.

The Tornado Project Online

In physical terms, this is a hybrid of the electric screwdriver, the vacuum cleaner, and Jimi Hendrix. The revolving supersucker is the most dramatic and destructive of all nature's displays, and with danger comes the dangerous. The enthusiasts at The Tornado Project drive their vehicles straight into the funnel, and you witness the greatest twisters of them all. Proof that pigs, cows, and several parts of Colorado can, and indeed do, fly.

http://www.tornadoproject.com/

The Lightning Page

Biblical pronouncements and fork-flash graphics make this the most hair-raising of all weather pages. As well as the hand of God, there's safety tips, terrifying tales, Van de Graff Generators, and an avoidance of things aluminium. If, as Psalm 135:7 states: "He maketh lighting for the rain" – then this phenomenon can't be mere electricity. No, lightning is a flick knife pulled from the back pocket of Heaven.

http://wvit.wvnet.edu/~djrobi/

Tsunami!

Huge, seismically-induced water-waves, Tsunamis can grow to the size of a seaside town. Even the most sun-fried surfer will climb up the nearest lamppost as he reads about the salty destruction these cathedrals of spray leave in their wake. Research has told us why, warnings are given early, and no-one must tell the cast of *Baywatch*.

http://www.geophys.washington.edu/tsunami/intro.html

CCN Storm Center

Just before drizzle sneezes and severe gales put on their Air Nikes, CNN yells "Storm brewing!" (digitally, of course). Multiple maps show multiple cloud swirls, oak trees are swallowed as if they were Twiglets, and every photograph advertises the practical benefits of wearing waterproof clothing. It's a multimedia lighthouse for the 21st Century.

http://www.cnn.com/WEATHER/storm.center/index.html

Tornado and Storm Research Organisation

Worrying fact of the month: the UK has the highest frequency of reported tornados per unit area in the world. The evidence? Photos of mangled caravans in the home counties. Why are these tornadoes not common knowledge? Well, being British, they are more genteel than their Yankee cousins. Are they dangerous? Hell yeah, like bungee jumping into a food mixer.

http://www.torro.org.uk/

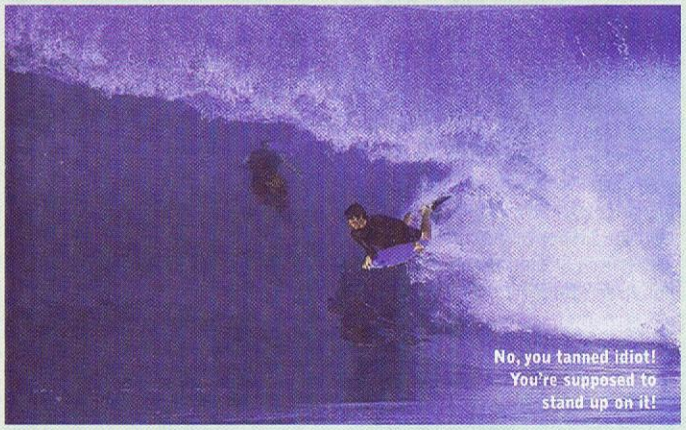
Hey, check out the Tsunami. It's makin' waves, dude.

The Hurricane Hunters Home Page

These Air Force Reserve pilots wait for a hurricane, and then fly a Lockheed WC-130 aircraft straight into its middle. This site enables you to go with them. Virtually. You can join the team in Cyberflight, and fly into the breezy Hurricane Opal. Hardly the real thing, but reason enough never to go on a picnic with these people.

http://www.hurricanehunters.com/

PLAYING OUT FOR THE SUMMER



No, you tanned idiot! You're supposed to stand up on it!

British peculiarity number 235: as soon as the sun comes out, the entire nation rifles through the bottom of its wardrobe, pulls out a large pair of comedy shorts and a saggy 'I've Been to Penzance' T-Shirt, and rushes to the nearest park to indulge in all manner of sport-related buffoonery. Well, the time to dispense with the lower half of your trousers is here again, and the Internet is wearing its most ridiculous Bermudas. Your wiry bud helps you fine-tune those female-impressing Frisbee moves; sorts out your moving kickflips from your hang-fives, and even persuades you that croquet is the world's most competitive all-action ball-game. The sky is blue, the world's your gymnasium, and you are just six steps from being Daley Thompson.

The National Rounders Association

Loved by the clergy and cub-scouts, rounders is not so much a sport as a jolly nice picnic that just happens to involve a bit of running. Its Elizabethan cucumber-sandwich appeal is nation-wide, and the pictures of Britain's rounders fanatics reveals that age, weight and plimsoll choice don't matter as much as enthusiasm. Sport for all, then? Nah, it's baseball for girls.

http://rounders.punters.co.uk/

The Croquet Association

Sweating is impolite apparently, so England invented croquet – the sporting equivalent of a ladies' 'excuse me'. Typically, the games ruling body lists every one of its fussily complex rules, before shouting: "Hip, hip, hurrah" at the business of nudging balls through hoops. Lawn chess for the ruling classes, or just crazy golf without the exciting bits?

http://clarisse.arl.wustl.edu/htbin/croquet

Skateboard.com

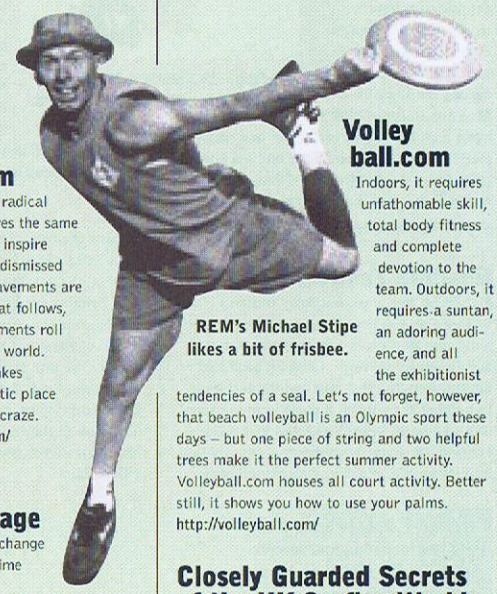
Unlike, say, badminton, the radical art of skateboarding requires the same love of danger that used to inspire Steve McQueen. Gravity is dismissed as ramps, half-pipes and pavements are climbed and conquered. Chat follows, tips are shared and tournaments roll in from every corner of the world. Its torn, frayed attitude makes Skateboard.com an authentic place to be. It's a lifestyle, not a craze.

http://www.skateboard.com/

The Freestyle Frisbee Homepage

Just one lesson here could change your whole summer. Quicktime VR ensures you can learn 'finger-tricks', rim-brushes, and complicated release techniques. You will perform 100-metre somersault catches between your legs by the middle of July. The stars profiled here can throw and catch polo mints over distance, and their ability to shine in public parks is inspiring.

http://www.frisbee.com/



REM's Michael Stipe likes a bit of frisbee.

Volleyball.com

Indoors, it requires unfathomable skill, total body fitness and complete devotion to the team. Outdoors, it requires a suntan, an adoring audience, and all the exhibitionist tendencies of a seal. Let's not forget, however, that beach volleyball is an Olympic sport these days – but one piece of string and two helpful trees make it the perfect summer activity. Volleyball.com houses all court activity. Better still, it shows you how to use your palms.

http://volleyball.com/

Closely Guarded Secrets of the UK Surfing World

Capturing the waves-'n'-beer philosophy of the Brit-surf community; this index lists places, shops, clubs, hostels and weather reports. Links to Surfers Against Sewage and Falmouth surfing mag *ThreeSixty* shows the impact the Net could have on the surf community. http://www.westwind.co.uk/westwind/surf/index.html

SUMMER FESTIVALS

Summer just wouldn't be summer without three days at a music festival. Sure, at the time it feels like you've gone on holiday by mistake – poor accommodation; prehistoric toilet facilities; beanburgers that could kill mountain goats – but the memories of being crushed against the main stage as your favourite band take the stage are priceless. This year sees the largest number of outdoor music events ever – from the face-paint-and-green-Dr Martins spirituality of Glastonbury in June, to the happy-when-it-rains indie chill of Reading at the end of August. It's stomach disorders, complete dehydration and £7 a pint of beer all the way.

Not only do the toilets stink, but the sky is hopelessly polluted.

Glastonbury Festival 1997

Surprisingly reluctant to get on-line, Europe's longest queue for make-shift toilets has many unofficial sites, but nothing bearing the name of Mr Eavis. Joanne Miller's home page has line-up certainties and rumours; every two-man tent ever made, and a survival guide for first time victims. *PCF* says: avoid nudity, flutes, wig-wams and anyone on stilts.

http://www.tbphq.demon.co.uk/jo/glasto97.html

Reading Festival 97

No official site as yet, but Andy Hatton's flower-splattered home page is an ideal place to anticipate the likes of Embrace, the Manics, and Fountains of Wayne. Covering band info, ticket buying, travel details and the best ways to avoid illness – this is a guide from someone who has shared headache tablets with Juliana Hatfield. An expert in an extremely muddy field.

http://www.rdg.ac.uk/~kcshaton/readf.html

Staying out for the Summer

"It's festy time" warns this rampant daisychain through 20 years of music outdoors. Its author has been going to festivals for two decades, and probably has a beard down to his feet. The photographs are of sunsets, pyramids and naked medieval folk playing bongos. The memories are of smoke-hazy days, barely visible through the rose-tinted sunspecs that seem permanently stuck to his face. Good times only then.

http://dialspace.dial.pipex.com/kshewan/festy.htm

Roskilde Festival 97

It may be the same size as Glastonbury, but Denmark's Roskilde Festival (26th-29th June) has fewer jugglers, a more eclectic band line-up, and the sort of toilet facilities that come close to the traditional idea of hygiene. This official site has all the news and band info, plus a bulletin board where you can arrange to meet your friends.

http://www.roskilde-festival.dk/

Suffolk Villages Festival

If Glastonbury is a gallon of cheap cider, then this is a china cup full of finest Darjeeling tea. In August, between the church spires of Sudbury and Colchester, the Suffolk Villages Festival will be celebrating its 10th anniversary. Sepultura and Metallica certainly won't be on the set list. Harps will be strummed, flutes will play and there'll be no careless shenanigans backstage. Hark! Is that the herald angel singing? No, that lovely sound is, in fact, the wait while the Essex Baroque Orchestra JPEG downloads.

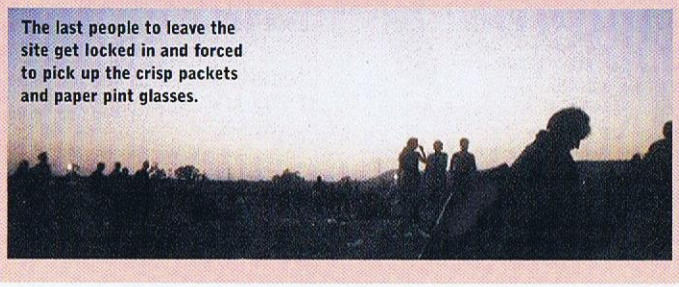
http://www.svfestival.demon.co.uk/

Reading – the festival for gurls. And other sensitive, flowery types.

V97

Virgin's one-festival-on-two-sites appears a more attractive alternative than it did when it hit our PCs last year. Leeds and Chelmsford host Britain's most inspirational live act, The Prodigy; the two-turntables-and-an-Elvis-suit genius of Beck, and reborn punkers Blur. Mind you, they've also booked Kula Shaker, Dodgy and James. Leeds City Council provide all the on-line details, and the dates are 16th and 17th August (tickets cost £28.50 a day).

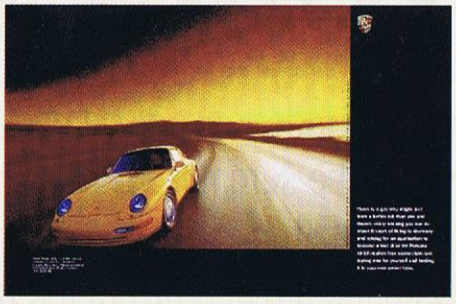
http://www.leeds.gov.uk/tourinfo/events/v97prg.html



The last people to leave the site get locked in and forced to pick up the crisp packets and paper pint glasses.

SPORTS Cars

What has happened to idealism – the great ambition that once drove the automotive age? Where are the sleek lines, sculpted hoods, wire wheels, tail-fins and wooden dashboards? Where are the soft-tops, wire-grills, two-seated passion wagons of old? Well, despite two decades of grimly functional car design, it's not all Cavaliers and Orions, y'know. An ever-growing number of Net pages rattle with the sexy hum of that most desirable of all four-wheeled machine: the sports car. Every classic has its own homepage and club, where accessories and chat are traded. And all share a common philosophy – who needs boot-space when you have velocity in a velvet coat?



You can't buy it, but you can look at it. Goddamn wages.

The Official Lamborghini Web Site

As with footballers and opera singers, most great sports cars are Italian. Few automobiles match the sculpted sharpness of Lamborghini, and this site purrs with the same effortless styling. Images, sound and movie clips capture every shimmering curve and detail, and the Lamborghini story highlights the company's humble beginnings and halcyon days. There's even a buying guide. How much? Don't ask. We're afraid to say.

http://www.lamborghini.com/

Our other car's a mini. We like to drive this one.

Aston Martin Owners Club

As anyone without wealth will testify, money can't buy taste. Sadly, however, taste costs money – and not many displays of taste cost quite as much as the Aston Martin. This is an exclusive on-line club, where dealers can be contacted and viewings arranged; where the car's perfect history is traced, and the photo gallery shows off its perfection as it moves at pace. Affordability comes in the shape of Aston Martin pullovers, at only £37.75 in the club shop. Is this cool?

http://www.amoc.org/siteindex.html

Flat Six Fever

Dr Ferdinand Porsche had a dream. He combed the iconic lines of the Volkswagen 'bug' into a sleeker, sexier, more quiff-like shape. Then he slid the engine of a racing car, and several cylinders of dynamite under the hood. Finally, he tested it at LeMans, and his creation became a legend. Flat Six Fever is a multimedia archive of Porsche history. From 356 to 986 in the blink of an eye.

http://www.gate.net/~jeffracr/history.html

The AC Cobra Page

Britain's oldest car maker almost failed its final MOT last year. Luckily, this leather-trimmed demon of a convertible sports car has been saved, and the applause can still be heard at this enthusiasts home page. The guru inventor of this two-seated classic is treated like a Messiah, and behind the huge number of articles, videos, parts and accessory exchanges lies auto-obsession – a near-biblical faith.

http://www.xs4all.nl/~luukb/

Ferraris.com

If the shimmering chrome doesn't blind you, the stories make you car sick. This unofficial site includes tales of Ferrari owners as they remember their first time. There's the nervous inking of paperwork, the heart-stopping engine growl and the sheer thrill of pedal and metal connecting for the first time on open road. Ha! These smug saddoes have overlooked something. Ferraris may have been hip in the 1960s, but these days they look like fluorescent spaceships made from cheesecake moulds.

http://www.ferraris.com/

Money's no object here – if you don't want to buy.

The TVR Sports Car

Washing off the weekend mud from his attempts at road-rallying, the TVR owner is a peculiarly British sports car fanatic. This collection of auto-trading, personal photographs and tips concerning rear wheel bearings resembles a club whose alphabet begins and ends with the letters of the car's name. That's fine if you're looking for parts, less so if you're an outsider looking to be dazzled.

http://www.domino.com/tvrcc/tvr.html

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PCF HELPLINE

"To be or not to be?" **Luis Villazon** answered that years ago, and he chose "to be." Lucky that, because a sack of your questions awaits him.

Luis Villazon
Your Host

***PCF* Helpline, 30 Monmouth St, Bath BA1 2BW**
pcfhelpline@futurenet.co.uk

This month, Luis is planning to confront the raw animal savage that rages beneath his otherwise calm exterior. Once a year, the easy-living and soft comforts of the 20th century become too much for his rugged, pioneering spirit. Turning his back on all the lily-livered western luxuries such as white bread, Ceefax and drinking water; Luis will spend a week with his family in Pict-like squalor in a shack in the woods of Scotland. Not for him the saccharine pleasures of cable television, percolator coffee, toilet paper or city diesel. The lark will be his music, the forest air his stimulant, the leaves his, er, toilet paper and ... well, okay he'll probably take some toilet paper with him. But that's it. He'll be cut right off from civilisation, and free from the petty distractions and politicking of modern life (apart from Radio 4, of course – you wouldn't expect him to do without the *Today* programme, would you?) What would he listen to while he eats his toast and marmalade? Well, of course marmalade is allowed – it's just oranges, isn't it? What could be more natural than an orange? Not in Scotland, perhaps, but imagine it was a shack in Tuscany...

Getting started

Last month, we learned how to distinguish your arse from your elbow. This month, we discover what each is for.

Q Sega Megadrive!

I have been wondering if you can convert Sega, Nintendo and Sony games to run on the PC, because I really like SuperNES and Megadrive games and I want to be able to play them.

Amir Poolagasundrum, Poole

A Sega games are sometimes converted for the PC, but not by the likes of you and me. You can't get a Megadrive emulator. This is because the big console giants are jealously protective of their little arcade creations, and use them as a way to sell their consoles (and thereby get you locked into one particular console flavour). Nintendo, in particular, is loath to let you play Mario games on anything other than a Nintendo console.

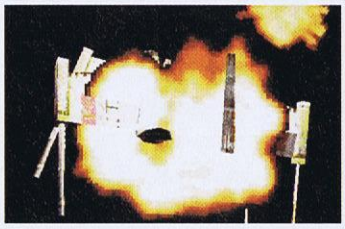
Even if console manufacturers permitted it, software emulation wouldn't be practical for any but the oldest of the Sega and Nintendo range. Today's cutting-edge consoles already deliver as many or more polygons per second than a decent spec PC with a 3D accelerator. By the time you factor in the overhead of software emulation, the PC version would run too slowly. That's why the games that are converted have to be rewritten.

Q Turbo or not turbo?

1. In *Wordpad, Netscape* and other text programs, I keep getting some kind of black mess all over my text. I can only get rid of it by refreshing the screen, or highlighting then unhighlighting it.
2. What is this turbo button lark on the front of my tower?

Jonathan Reynolds, Southampton

A 1. Sounds like the Windows driver for your graphics card has bugs in it. Contact your vendor, or visit the manufacturer's Web site for an upgrade.
2. The turbo button is a silly legacy from the days of the original IBM XT machine. In those days, the motherboard was clocked at 4.77MHz. When the 286 AT came out, it ran at a 'blistering' 8MHz. This was so fast that not all software could cope, so manufacturers provided a button to switch between speeds. Nowadays, the turbo button usually switches between much higher values such as 25MHz and 33MHz, but the principle remains the same. Leave the turbo speed switched on and never change it. I have never encountered any software that refuses to run unless the lower speed is selected. Lots of systems these days don't even bother with the turbo button, and a good thing too, in my opinion.



If you do have a turbo button on your PC, it's vitally important that you don't push it in too far. Probably best if you ignore it.

Reader's Tip

"Please give me £25 for finding out the hard way that you should never plug a PS/2 mouse into a 'PS/2 mouse to serial mouse' converter in a COM port – and then plug said COM port into the PS/2 mouse pin-out on the motherboard (even if it does fit well). This disables your keyboard, permanently. I did try to plug the COM port into the COM port pin-out on the motherboard, but nothing happened. This led my presumptuous self to attempt this very foolish way of trying to save money on a new mouse. The mouse didn't work, either."

Charles McAuley, Sunningdale

I haven't a clue what you're talking about, but if you promise not to explain it to me, you can have your £25.

Q It's the Cheapernet

I have three computers, one of which is a laptop. I would like to know the cheapest way to network them? The laptop doesn't always have to be connected.

Neil Mowforth, via e-mail

A Well, the cheapest method of all would just to be to tie the computers together with lengths of string. This doesn't give you much in the way of bandwidth or reliability, but you didn't specify any minimum performance threshold, so I couldn't resist the opportunity to be both pedantic and annoying. Next up in terms of expense (and only marginally less annoying) would be to use *SneakerNet*, which is a US invention. Basically, when you want to transfer a file – you copy it onto a floppy disk and walk (in your sneakers) to the target PC, insert the disk, and copy the file off again.

Sneakernet is actually impressive for file transfer, but you can't play *Quake* over it – so the next step up is to get a bog-standard NE2000 compatible ethernet card for each desktop machine (£23.50 a piece from Simply Computers ☎ 0181 498 2100), and string a length of coax cable between them (£13 for five metres). You can then use *Windows 3.1* or Windows 95 as your network OS, and you're away. For the laptop, you could get a network card that will plug into the parallel port – but at £105 a throw, you're probably better off just using a null-modem cable (£17.63) and the Windows 95 direct connection facility.

Q Starting from scratch

In 'Sweet Revenge', *PCF* 65, you mention starting from scratch, backing-up data, and reformatting the hard drive before re-installing Windows. I apologise for asking an obvious question, but can you tell me step-by-step how to do this? I've absolutely no idea what to do. In what order do I install drivers? How do I install drivers? Will my modem, mouse and display all work once I get going? When I want to reconnect to my Internet provider (AOL), will I need to change anything before joining up?

Craig Thornton, via e-mail

A Rule number one of PC ownership: if you don't know how to reinstall your OS, you probably don't know enough about your system to judge whether or not you need to do it in the first place. Some things in life are just too complicated to be condensed into a five-point checklist.

I mean, for a start, I bet you don't have a proper back-up solution. Putting several hundred Mb of vital data onto floppies is almost bound to end in disaster, and certainly isn't something I would attempt just because I want to fine-tune my Windows performance a bit. Trust me – this is not beginner territory.

Q Flash Gordon

How easy is it to upgrade a modem from 28.8bps to 33.6bps? I know that some modems are flash upgradable, but what do you have to do to carry this out? The modem I have is a Trust Communicator external 28.8 V/34 fax modem, based on the Rockwell RC288dpi chipset. Can this be upgraded?

Mike, via e-mail

A Flash upgradable modems are fully functional at the higher speed, apart for the fact that they've been crippled down to the lower speed by their BIOS. When you upgrade them, you get an uncrippled version of the BIOS on a disk, and a program to install into into the flash RAM on your modem. This is one of those back-to-front concepts that only makes sense to people who work in marketing.

The good news is that you are free of this insanity, because the engineers at Trust have refused to incorporate this flash RAM nonsense. When you buy a Trust modem, you can be sure that it's already running as fast as it can go – you haven't paid any money for hardware that sits idle unless and until you decide to upgrade. And if you do decide to upgrade, you know that you are going to get a whole shiny new modem and not just some piddly little disk. Okay, so it costs a bit more, but you can't really put a price on that kind of reassurance, can you?

Suave it may be, ostentatious even. But flash? Never in your wildest dreams...

Reader's Tip

"If you live in a block of flats, get all your neighbours to buy themselves a network card each and some cable. Then, invest in a decent server system (a P166 with NT Server, for example) with an ISDN connection to the Internet and a network card. Now, set up a LAN for the whole flat, and configure NT to act as a gateway to the Net. That's it! Local, flat-only ISP! Simply get your neighbours to pay a small monthly fee to cover the ISDN line expense."

Andrea Coppini, Malta

Better yet, why not lay fibre optic cable through the building and offer cable television?

Q MMXplanation

I have a Gateway 2000 P200 PC which is about six months old. Can I replace my 'normal' processor with an MMX processor of the same frequency, or would I have to change my motherboard as well? I was under the impression that the only difference with MMX machines was the internal workings of the processor.

Tim Moggeridge, via e-mail

A MMX CPUs run the processor core at a different voltage from the rest of the chip, so you need to have a motherboard that supports that kind of shenanigans. Which yours does not, so Gateway tells me. You could install an MMX Overdrive processor, but these are currently only available for Pentiums up to 100MHz, and Intel is not planning to make them for speeds beyond 133MHz ever. So, what does that leave, then? Well, a new motherboard plus an MMX processor, I'm afraid. This is going to set you back £464 for the CPU, and at least £105 for the motherboard – which is a steep price tag for the 15 – 20 percent performance hike you can expect.

Q A pain in the abyss

When my PC boots up, it tries to read from the disk drive, but it doesn't stop making noises until Win 95 is up. It even does it when I load programs such as *Word Perfect* and *Publisher*. Is there a way of stopping this, which will still allow me to boot from a floppy disk if I need to?

Satan, via e-mail

A Surely the Lord of Chaos would *prefer* horrible noises from his disk drive? The fact that your e-mail account is not with demon wraps it up for me. With your diabolical nature refuted, I have no qualms about offering you some advice. One: I think your floppy controller is faulty and needs to be replaced (£14.10 for a bottom of the range jobby from Simply Computers ☎ 0181 498 2100). Two: summer's here, get out into the fresh air, instead of sulking in your room, wearing black and trying to look moody.

THE KNOWLEDGE part 6

K6

Become an irritating know-all in seconds with another dose of easy-to-swallow PC intelligence.

That's a mountain...

No, you're thinking of K2. K6 is the brand new processor from AMD, and it looks like the plucky challengers are finally catching up with Intel.

How's that then?

Well, the K6 is a competitor for the Pentium Pro, and it comes in three speeds – 233MHz, 200MHz and 166MHz, with the likelihood of chips appearing at speeds of up to 300MHz later in the year.

Is that it?

No, because the K6 clones MMX technology as well, beating Intel to the mark with a true 32-bit MMX-enabled processor.

Where can I get one?

On spec, the K6 does indeed look pretty special, but in benchmarks the K6 doesn't perform as well as a Pentium Pro. A 233MHz model was put up against a 200MHz Pentium Pro and ran at more or less the same speed. So you're looking at a 15 percent speed difference between a K6 and a Pentium Pro with apparently the same clock speed.

Why?

On paper the K6 should fly past the Pentium Pro – in addition to clock speed, the K6 has a primary cache four times the size of the Pentium Pro's. However, the Pro has a built-in secondary cache running at processor speed, while the K6 relies on an external cache running at a motherboard speed – that probably has a lot to do with the slowdown.

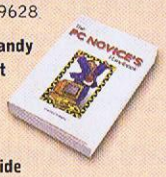
I won't bother, then.

Why not? We're talking about the Pentium Pro here, and there's no reason you want one of those anyway. The bottom line is that the K6 is cheaper and faster than a comparable Pentium, and if you can live with the stigma of not having an Intel processor, we think you'll quite like it. Check out our PC round-up starting on page 122 if you're still not sure.

BOOKSHELF reviews

PC Novice's Handbook

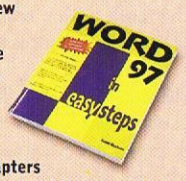
£4.99 by Harshad Kotecha
Published by Computer Step
ISBN: 18740 29628



This book is a handy intro if you don't know a thing about PCs. Divided into sections that guide you through buying a PC, using Windows and installing software; Kotecha's *Handbook* assumes no PC literacy. If you own a PC and have tackled setting it up, then rest assured that you've left this book's advice far behind. However, there are tips on upgrading, a limited glossary, and a genuinely informative intro to the Net. This is a cheap, plain-English way to get the answers to those most difficult questions (such as how to turn your PC on).

Word 97 in Easy Steps

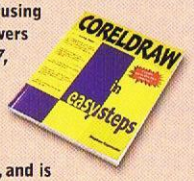
£7.50 by Scott Basham
Published by Computer Step
ISBN: 18740 29687



With an informative reference guide on the first few pages, this title takes the mystery from *Word 97's* array of functions. There are chapters covering all levels of the app – from text manipulation to artwork and connection to the Web. Each page features labelled illustrations which clarify the explanations in the text, plus handy tips and warnings are also highlighted. This is useful if you're a beginner, but provides no more information than that already within the *Word 97* help file. Most of the situations it describes are second nature to you after just a couple of days

CorelDRAW in Easy Steps

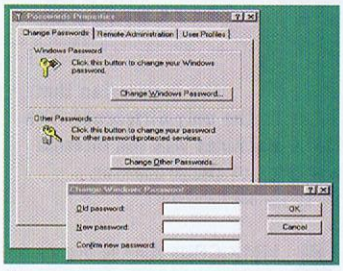
£7.50 by Stephen Copestake
Published by Computer Step
ISBN: 1874029725



Containing dozens of mini-tutorials for *CorelDRAW* procedures, this title is a basic but informative intro to an often confusing subject. It covers *CorelDRAW 7*, the latest version of this popular graphics and DTP package, and is fundamentally a reference guide more than anything. Unless you're the most PC-illiterate person, you find you're rapidly ready for something more advanced. Black and white screen images illustrate every point and there are little symbols to highlight items to remember, or points of caution. File under 'Useful for Beginners'.

Windows 95 polish

It's intuitive, robust and easy to use. It also tells you the winning lottery numbers *and* makes you more desirable to women. Yes, it's the elixir of life that is Windows 95.



The password security on Windows 95 is comparable to putting a steel padlock on a packet of heavily salted snack treats.

Q Password panic

I recently did something to our PC (with Win 95) which makes it ask me for a password each time I log into Windows. My dad doesn't know about this yet. How do I tell Windows not to ask for a password to log on to the "network"? I say "network" due to the fact that there is only one PC on it.

Deeps Manglani, Tenerife

A I can see how that could be irritating, but surely your dad isn't on such a short fuse that he is going to explode over having to enter a password when Windows starts? In fact, if several people use the same PC, then the Win 95 user profiles are a good way of enabling each user to customise the desktop according to taste. Even if that lump of shrapnel lodged in his skull makes your dad incapable of seeing the logic of this argument, there is no need to get jumpy. You see, Win 95 is a terribly insecure operating system, and its password system is easier to get around than a favourite aunt whose birthday you forgot about.

Go to the Start menu and chose Settings/Control Panel. Double-click the Passwords icon, and click Change Windows Password. Enter your c current password at the top, but leave the other two fields blank. Click OK, then Close and choose Close all programs and log on as a different user from the Shut Down menu. When the password dialogue pops up this time, you should see a tip advising you that if you leave the password blank, you won't be prompted for it again.

Q Phantom file

Whenever I boot up Windows 95, I get a message that the file PCNFS.386 is missing, but is being asked for by the SYSTEM.INI or the Windows registry. However, when I make an 'empty' file with the name PCNFS.386, the message appears saying that the file is being asked for by the SYSTEM.INI. The problem is that the SYSTEM.INI contains no reference at all to this file. I have done a 'containing text' search in *Explorer*, and it brought up a file named NETCLI3.INF. Naturally, I copied this file, renamed it, and removed all traces. But when I reboot, the first message reappears. What can I do? My dad is going ape!

Ian Anderson, via e-mail

A Lots of angry dads this month. These men need to take things easier, or their blood pressure will be so high that the veins will rip loose from their foreheads and thrash around like so many maverick fire hoses. Anyway, once again, all this paternal fury is misdirected because this is quite simple to fix. The message says that the file is being asked for by SYSTEM.INI or the Windows registry. You searched SYSTEM.INI and it wasn't there. Anyone want to guess where you should look next? What's that Mr Anderson? The registry? Give that man a cigar! Run REGEDIT from the Run option in the Start menu, and chose Edit/Find on the menu. Type **PCNFS.386** in the search box, and see what turns up.

Reader's Tip

If you've started using *IE3.0* instead of *Netscape*, you may have noticed that when you use the File/Open command from the menu to open a file from your hard drive, it doesn't remember the path. Adam Sheik certainly has, and finds it most annoying:

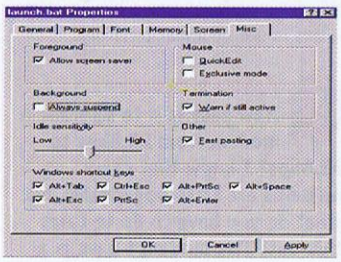
"This is most annoying," he writes, **"when trying to view lots of saved Web pages. However, all is not lost. Simply type the full pathname into the Address text box, and a Win 95 file list appears. This enables you to browse through saved pages, and use the Back button to return to the directory."**

Q A fresh batch

I've made a program in *Visual Basic* with which to count my on-line time. I have a shortcut on my desktop to connect to the Server, and I need to run my program through this same shortcut. Can I create a shortcut which runs two programs, similar to a batch file for Windows?

Francisco Miguel, Portugal

A Actually, an ordinary DOS batch file works just fine. In Win 95, you can run Windows applications from the DOS command line. This means that you can create a batch file to launch both programs. The only mild complication is that, by default, DOS batch files are set to suspend execution unless they are running in the foreground. This means that when your batch file launches the *Visual Basic* program, the batch file is put into the background – and the next line, which launches your e-mail, isn't processed until you flip back to the batch file window. To fix this, right-click on the batch file and choose Properties. On the Misc tab, Always suspend should be unchecked.



Some Microsoft programmers are paid by the checkbox, it would seem.

Doing it in DOS

It's primitive and clumsy, and you wouldn't introduce it to your mother. And yet, somehow, you still want to use it.

Q Defrag doubt

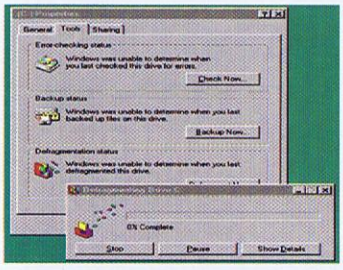
I have a P133 with 24Mb and a quad-speed CD-ROM. My problem is that I upgraded from Win 3.1 to 95 and got rid of my CONFIG.SYS and AUTOEXEC.BAT, so that the PC starts up faster. In Windows, the CD-ROM works fine, but as soon as I exit into DOS I lose it. It states Device driver not found (D:MSCD001).

One more thing – is it really necessary to de-frag a 130Mb hard drive with two percent fragmentation? This is what a mate keeps doing at work, but I understand that anything under about 10 percent makes no noticeable difference to the speed.

'Ruthless' Roger Brown, via e-mail

A That's the trouble with being so ruthless – it's easy to get carried away and throw out the baby out with the bath water. You need to put the CD-ROM driver back into **CONFIG.SYS**. This won't get used except in DOS mode, because Win 95 is intelligent enough to automatically substitute 32-bit drivers for real mode ones where available. You also need the **MSCDEX** file in **DOSSTART.BAT**, but you've already done this or you wouldn't get the **Device driver not found** message.

As for defragmentation, you can tell your mate that at two percent fragmentation, the time spent running defrag won't be recouped by the reduction in disk access times. Of course, that often isn't the point. Disk defragmentation is an important posturing activity used by many male office workers as a way of establishing the hierarchy. Your mate is probably the silverback of your office, so if you find that he has first choice of the females, you know why.



Regular hard disk defragmentation also reduces blood cholesterol, and can improve the fuel economy of your car.

Reader's Tip

Another *Internet Explorer 3.0* tip: Carl Greenhalgh of Keswick explains how to add an Edit button to the toolbar, enabling you to open the current HTML document in the application of your choice:

"In Windows Explorer, select View/Options. Choose the File Types tab, and find the type Internet Document (HTML). Select it and click Edit. In the Actions window, click New, and type `Edit` in the box. Click Browse, and select the program you want to use to edit the HTML source Click Open, OK, Close and Close again.

You can now open the current HTML page in *IE* by clicking on the cool Edit button on the toolbar. An added bonus is that by right-clicking an HTML file in Windows Explorer, you have the option to edit it there as well."

Q Magic modems

Can you give me the low-down on these new-fangled software modem things? I've just purchased a P200 MMX system and, as I understand it, it can run a software modem. How does it work? Ultimately, would hardware be the better choice? After all, where would you plug the damn phone line in?

Arun Mathew, Ireland

A Ah, that's the beauty of it – you don't need a phone line at all. The modem software sends the signals down the mains cable and out onto the national grid (where they find their way onto somebody else's PC which has a hardware modem). Okay, I'm kidding – what happens is that electromagnetic pulses are used to induce a signal in a nearby phone line, without it being plugged-in. *Still* kidding – here's what *really* happens: software modems still have a phone socket, loudspeaker, a few LEDs and so on, but all the electronics is eliminated because MMX technology is so wonderful it can cope with the analogue to digital signal conversions itself (without slowing other apps down too much). This makes modems much cheaper to produce and easier to upgrade.

Q Virtual virus

I know I've written to you about this virus already, and that you said then that it was a hoax. Well, this virus thingy got past all of the virus protectors at UK On-line. The message entitled 'Penpal Greetings' ended up on my ma's e-mail. Obviously, we didn't look at it, and deleted it. You do know that all of this was checked by an American Professor – and IBM – and was found to be true, don't you? Our PC seems to be running fine, though, so hopefully we weren't caught.

Jon Wendzina, Bath

A Oh yes, this would be Professor B Liar at the University of Utter Fallacy, would it? The Penpal Greetings hoax is a virus but it doesn't infect your PC. Instead, it infects the hysterical imaginations of gullible individuals like you. It is transmitted in the form of a warning by well-meaning Internet newbies, who have only been on-line for 30 minutes, and suddenly think they're the only people who can save the world. IBM has *not* confirmed that this virus is real, so whoever misinformed you is either wrong or part of the hoax. Penpal Greetings is not the first of these spoofs, because there was another one some years ago called Good Times. As long as people prepared to believe this unsolicited e-mail from unauthenticated sources, it will not be the last. But, don't take my word for it. Call leading anti-virus researchers, S&S International, (*Dr Solomon's Virus Checker*) on ☎ 01296 318700.

IBM has also recently e-mailed me to say that France has now annexed the Isle of Wight. It enclosed this photo as proof.

BUZZ WORDS

Suck away the dust of ignorance with our turbo-charged vacuum cleaner of knowledge.

Bandwidth

It doesn't matter how fast the bits and bobs that you connect to your PC are, they'll only go as fast as your bandwidth allows. This is measured in bits or bytes per second for digital devices, and if you value it then you'll have your hard disk connected to an EIDE or PCI bus, and you'll hook up to the Net via cable or ISDN line.

SDRAM

The faster your memory, the better the performance you can eke out of your PC. DRAM (Dynamic RAM) has long been a favourite for mainstream PCs, but now manufacturers are leaning towards Synchronous DRAM, which can run at higher clock speeds. If you want really fast memory you could invest in Static RAM, but you'd have to spend a *lot* of money.

Cougar

HTML, the language that defines the look of the WWW, is in constant development by the W3 Consortium, and the next version will be called Cougar. Still in the planning stages, you can expect it to contain more provisions for flashy visuals and multimedia excitement, and you can expect the Web to become even slower because of it.

Extranet

What do you get if you cross the Internet with an Intranet? You get an Extranet, that's what. It's an Intranet that can also be accessed by outsiders, as long as they have a valid user name and password. Extranets can also be set up to allow access to certain areas and they're becoming popular as a way of businesses exchanging information.

Cross-dresser

A cross-dresser is someone playing in a team match of *Quake*, who changes his colours to switch from team to team and be on the winning side. Cross-dressers are even more hated than campers, and *Quake* coders have wasted no time in knocking up server patches to prevent players from indulging in this despicable act.

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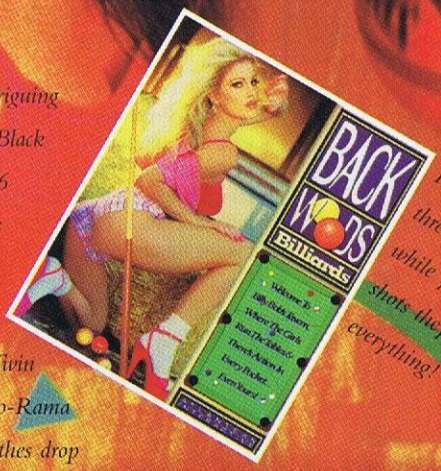

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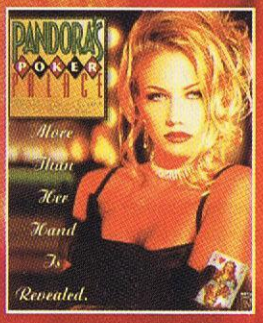

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Hardware Hell

Hell hath no fury like a motherboard scorned.

Q A friend in need...

I have committed the worst offence imaginable, namely fiddling with a friend's PC and subsequently rendering it useless for three months. Initially, the PC was a 486SX/25 with 8Mb and two hard drives. There was a problem with the power supply, because it didn't fire-up one of the hard drives (the one with the system files on it) without a swift kick. But apart from that, it worked fine.

My friend decided that he wanted me to sort out the problem, so I installed a new I/O card and interface cable to the hard drive that wasn't starting properly. But this didn't change anything. The real problems started when I installed a clone 486DX2/80 CPU, heat sink and fan. I set the jumpers to the 100MHz setting (accidentally), but when it didn't work, I changed them to the correct setting.

The first couple of times the system started, the monitor refused to display anything. Just in case there was a problem with the CPU, I installed the old 486SX/25 CPU, and changed the jumpers accordingly. Now, after swapping back and forth between CPUs, the system still has a blank monitor screen every time, and the PC refuses to boot up at all (even though the CPU fan and HDD appear to work normally). I have tested the system with another graphics card and another monitor, but it doesn't make any difference.

Dave Lawrence, Horsforth, Leeds

A You've blown your motherboard, if you're lucky, and both CPUs if you're unlucky. I mean, think about it, what else can it be? The PC isn't getting past the very first stage of the power on self-test (POST), but you know that the graphics card, monitor and power supply are all okay. That only leaves the motherboard and the processor. More than likely, you got too careless with all that component swapping, and fried the motherboard with static. It's very easy to do. I've done it myself and you can think of it as a kind of baptism of fire in your career as an amateur PC fixer. Never take the lid off someone else's PC, unless you can afford to buy them a new one.

Reader's Tip

"Here's a tiny and completely stupid tip. If you're a DOS user and have ANSI.SYS loaded, then type this:

```
@PROMPT =18e[1;30m%%@DISKFREE[$N,MC]=18e[0m
$P$G
```

This presents you with a small display on the left of your C:\ prompt, advising you of how much free space you have on the drive you're using. It looks stupid, yes, but it's useful: you don't have to use CHKDSK, or make a DIR to know if you have enough room to install that app."

Manuel Jaime, Spain

Actually, Manuel, that's easily worth £25 – and it's a lot less stupid than the *mierda que suelo recibir* (excuse my Castillian).

Q Matching memory

I have recently bought a Compaq Presario Model 4118 PC. It has 8Mb of EDO RAM on the system board, and x2 4Mb in the SIMM slots. I want to upgrade my memory to 32Mb. I understand that EDO RAM must be added to the system in sets of two (that is, 2 x 4Mb, instead of one 8Mb SIMM). Can I just add two 8Mb EDO RAM SIMMs to the remaining two slots, or do I have to get rid of my two 4Mb SIMMs and start again?

Stephen Thwaites, via e-mail

A Because your RAM is EDO doesn't mean that it must be added in sets of two; it's because you have a Pentium (all the Presario 4000 series have Pentium processors). The only other rule is that both SIMMs in the pair must be of the same size and type. As long as you follow this rule, it's fine to mix SIMMs sizes between different pairs.

Q Various voltages

I have recently upgraded my motherboard to a PAK-2110. At the time being it is mounted with a Cyrix 686, but I am already thinking of a future upgrade to an MMX Pentium. The motherboard has two sets of jumpers. One determines whether the core voltage is 2.5-, 2.8-, 3.5- or 3.3-volts. The other determines whether the IO voltage is the same as the core voltage, or else 3.3-volts. Would such a motherboard support an MMX processor? The manual says something about the support for Intel chips of type P54C and P55C, but I'm not sure whether this has anything to do with MMX.

Savio M Sacco, Gozo, Malta

A The P55C is Intel's internal code for the MMX Overdrive processor for systems that currently have a 100MHz Pentium. This actually gives you all the confirmation you need. The technical requirement for MMX CPUs is that the motherboard supplies what is known as 'split-plane voltage' to the processor. MMX chips take 2.8-volts to the CPU core, and 3.3-volts to the IO pins – so your motherboard will take to MMX with ease.

Q Lousy Landmark

I am currently agonising over whether to defect from Intel and get a Cyrix 686 processor. I know that you have previously pooh-poohed the Cyrix CPUs, but I have recently seen figures from the *Landmark* benchmark which show the 686 to be vastly more powerful than the equivalent Intel CPU. What is this *Landmark*, and how did it come up with such a high figure if the processor is no good?

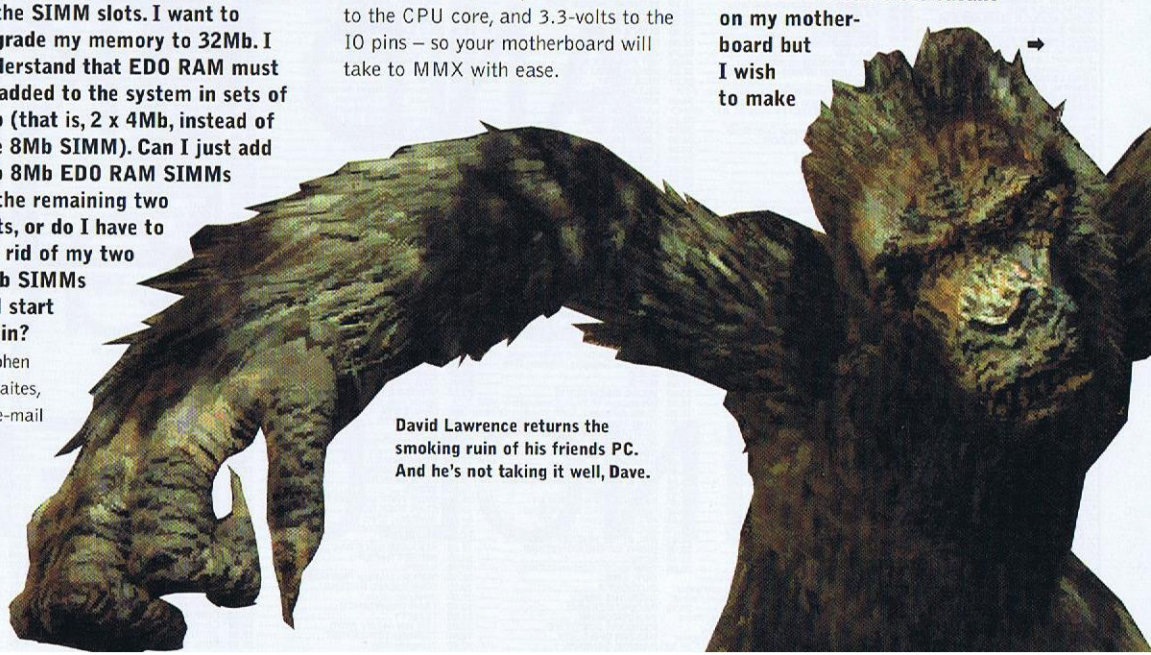
Elisa van Druck, Antwerp

A *Landmark* only measures the CPU, and probably with a simple multiply/move loop. It also features a math processor reading and a video text mode reading. Unlike *WinStone*, it does not test the hard drive or operating system at all. It is old and may be misleading. With modern GUIs, graphics speed and hard drive speed is critical. Also, advanced CPUs may optimise the simple code in *Landmark* much more than they could optimise code used in real applications.

One of these days, a CPU maker will release a CPU that looks ahead far enough in the code to see that *Landmark* does the same thing over and over many times (and 'optimises' it by doing the job once).

Q On the Buses

My friends and I have a small four-machine LAN (all Pentium 100s) between us which is set up in my room. The network cards we are using are all 'LanPro' Edimax ISA PnP NE2000 compatibles (NetWare approved) with BNC cabling to connect them. My dilemma is that there are no more ISA slots vacant on my mother-board but I wish to make ➡



David Lawrence returns the smoking ruin of his friends PC. And he's not taking it well, Dave.

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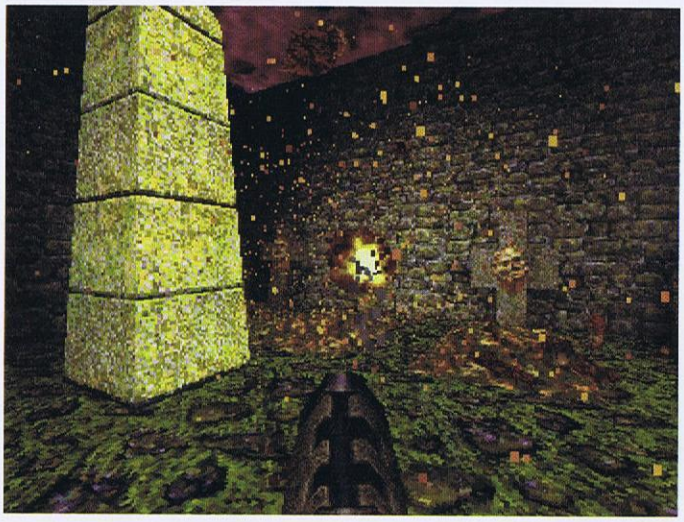
➡ one available for a future purchase. I have recently seen PCI ethernet network cards available. Is it therefore possible that I could remove my ISA card and install a PCI replacement which would do the same job and work with the other ISA cards on our LAN, or must each card be PCI?. We are currently working at 20Mb/s on full-duplex, would a PCI card (although designed to be much faster, about 100Mb I think) work at this speed as well?
E Johnson, via e-mail

A Yes. The bus architecture of your network card has no bearing on its compatibility with your network. By the same token, your graphics card will plug into your monitor irrespective of whether it is PCI, ISA, MCA or VLB.

THOSE OLD FAITHFUL CYRIX CPU QUESTIONS...



If the explosions in *Quake* feel more like one of those snowstorm paper weights, then you're probably a floating-point unit short of a processor.

Q Apocalypse now

While trying to configure *MDK* to run more smoothly, I noticed a screen which compares your machine with other CPUs. 'Smashing', I thought, until I saw that my machine was running at a score of 42. Just compare this with the score of 44 for a P90, 65 for a P166, and 100 for a Pentium Pro 200. Well, my machine is a Cyrix P150+ with 16Mb RAM. So what's going on? Is my machine *that* slow? Do I need more RAM? Do I need a real Ninja processor? Do I need an Apocalypse 3D card, or what?
Tony Benham, via e-mail

Q Gloating point performance

A few months back, I moved camp from 486 land to Pentium country. I now have a P166+ with 32Mb EDO RAM, and a 2Gb hard drive. Why didn't anyone tell me Cyrix chips were *so* slow at modern games? 'A little bit slower at 3D games' they told me. Ha! The benchmark for *MDK* says that my P166+ is running slower than a P90! Why is it that we're not given the correct information?
Andrew Cuthbert, via e-mail

A Look, I've been saying since October last year that Cyrix CPUs can't hold a candle to their Intel equivalents when it comes to the floating point welly that is needed by today's 3D games. So don't get all "Why wasn't I told?" with me. If you want to know what's going on, read *PC FORMAT*. You don't need more RAM; you don't need a new graphics card, and you just need to have a processor that hasn't been optimised for business software.

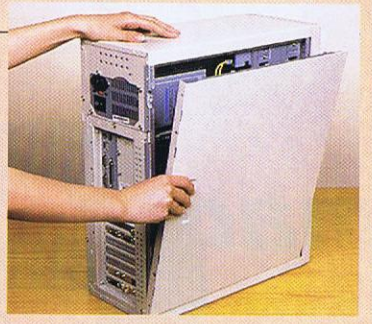
I really can't emphasise this enough. If you want to play 3D games on your PC, buy Intel. All the competitors have forsaken floating point performance, in favour of integer horsepower. The intro of MMX has only widened this gap. After today, anyone who buys a Cyrix-based PC and expresses disappointment about its performance in *Quake, MDK, Destruction Derby 2, F1GP2* or any other 3D game, has only themselves to blame. If Cyrix releases a processor that addresses these shortcomings, I'll let you know.

ALL YOU NEED TO KNOW ABOUT...

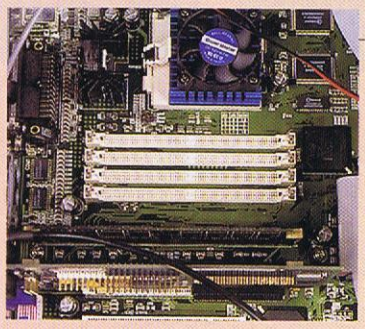
Upgrading your memory

Adding extra memory gives your PC a quick and effective performance boost. It's also the easiest hardware upgrade you can make...

1. Room to breathe



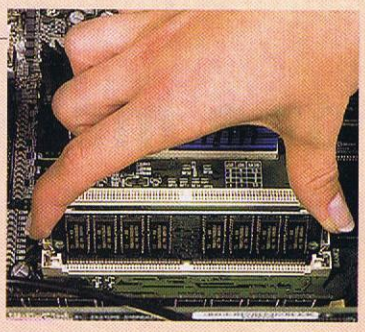
Windows 95 gets faster when its got room to breathe, it needs 24Mb or more to run efficiently. Before anything else, check your motherboard manual or your PC's supplier to find out what kind of memory you need, if it's a new Pentium you'll want 72-pin EDO, but check. The first step is to open up your PC, making sure it's turned off! Don't touch any components and earth yourself (touch something metal) to ensure you don't give your PC an unhealthy static shock.



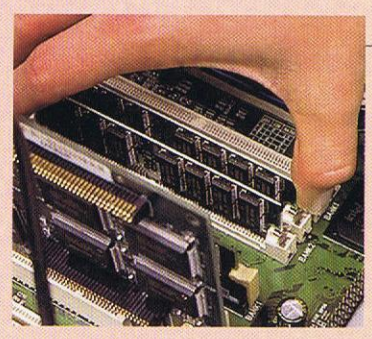
2. Thanks for the...

Memory comes in the form of circuit boards holding the memory chips, these slot into sockets on the motherboard. Most Pentium systems uses 72-pin SIMMs, Single In-line Memory Modules, these have a row of 72 connectors or pins and are fitted in matching pairs. New systems are turning to 168-pin modules which can be fitted singly. This motherboard has four free 72-pin SIMM sockets, below these are two DIMM sockets, one occupied by the existing memory.

3. Do your SIMMS



Gently offer up the SIMM at an angle to the socket and make sure the pins at the bottom are securely located in the socket. The SIMMs only fit one way round, use the notch near the middle to guide you. The bigger 168-pin DIMMs are slightly different, they slot in vertically, directly into the slot. Handle the memory carefully and avoid touching the chips and pins. Because the number of slots in limited it's better to get the biggest capacity modules you can afford.



4. Reunited

Carefully push the module upright, two spring clips either side should hold it secure. On 168-pin DIMMs there are clips at either end you clip up to hold the memory in tightly. Now it's time to put the case back together again and switch your PC on. That's all there is to it. If the upgrade has been successful then your PC will find and utilise the extra memory without any configuration. Windows 95 and games will now zip along much happier.

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PCF LETTERS

Thoreau said: "Simplify, simplify." You say "Complicate, complicate." We say absolutely nothing – we just smile upon your letters in a Gnostic way.

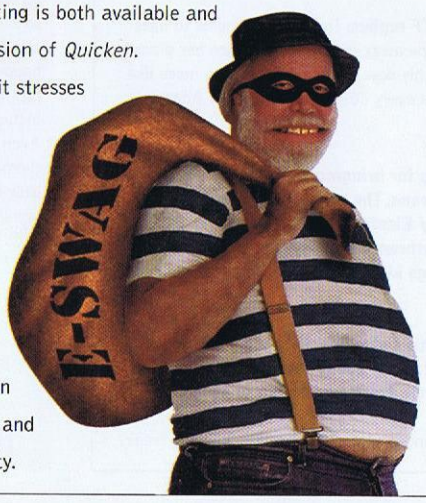
QUICK EMBEZZLEMENT

LETTER OF THE MONTH

Dear *PCF*, I am trying to find an e-mail address where I can contact Intuit, regarding the possibility of people gaining access to my bank account details via the Net. I've read in magazine articles that it may be possible for people to download an *ActiveX* applet that scans the user's hard drive for a copy of *Quicken* – and if it finds a copy, sets up a transaction to transfer funds from your account, without you knowing until you receive a statement. I haven't read anywhere of Intuit doing anything to counteract this threat, and so am wondering if there's still a problem and can anything other than not using the Web be done to avoid it happening to me? Will you run an article on this, and the dangers it poses in regard to other hard drive files being accessed illegally? Please don't print my e-mail address, because I'm paranoid that someone'll use the info to deposit wads of cash into my account.

K Graham, Blackpool

***PCF* replies:** At first we thought that was a hoax, but a sprint round the newsgroups reveals that this isn't the case. A call to Intuit clarified matters. It started out as a demonstration by the Chaos Computer Club in Germany of security gaps in *ActiveX*. It showed how an applet could open a *Quicken* file and insert a credit transfer. It used *Quicken* because it was a well-known financial app, and it also cheated. For an *ActiveX* applet to milk your bank account, you have to ignore warnings from both *Explorer* and *Quicken;* be blind to the fact that *Quicken* has been opened to alter your details, and live in a country where on-line banking is both available and supported by your localised version of *Quicken*. It can't happen in the UK. Intuit stresses that despite Chaos' demo, this problem hasn't been replicated in the real world where on-line banking is available to home-users. Even if an applet could locate your files, they're password-protected and encrypted. To be on the safe side, don't turn off *Explorer's* security features and you'll notice any *ActiveX* activity.



Call collect

Dear *PCF*, I think that this 'free phone calls' business needs some perspective. In the USA, many local cable companies are moving towards a pay-per-call system. The reason? There are only so many call circuits (end-to-end connections) available at any one time on an exchange. Asking people to pay for the time that they use a connection is a way of ensuring that some lines are available constantly.

I'm sure a few readers will remember the problems Kingston Communications in Hull had a few years back, when subscribers kept their modem connections open whenever the calls were free. It also caused problems for ISPs and BBSs, because they have a limited number of modems.

Yes, it is good when you can just turn on and move seamlessly between local and distant file resources, and that's why companies pay for leased lines. Unless a new (packet-style) system is put in place for telephony (that is, ATM), then we're not going to see 'free' permanent connections to ISPs for domestic users. Besides, with cable or with other discounts, the cost is often less than 1p per minute. For the price of a short bus ride you can connect for an hour.

I hope Gary James is happy back with BT. I'm sure he'll also be pleased when the next issue of *Which?* comes out showing (as I'm sure it will) that cable companies still beat BT's newest prices and discounts. That might change with the new MCI+BT=Concert merger. But we shall see...

So, to give some answers to the questions Gary posed:

1. 'Free' calls (those where your local call costs are covered by your monthly subscription) are widespread – North America is still a 'free' zone on the whole. Home-to-business calls are beginning to attract more charging, as he saw with TeleWest.
2. It is very unlikely to happen. The closest you'll get is home subscriber calls within your exchange area. Then again, there's always the promise of cable modems with their high transfer rates and low connection fees...

Chris Hart, via e-mail

***PCF* replies:** Ooh, those nasty mega-corporations. We suppose it's a bit too much to ask of BT to plough some of its astronomical profits back into the important work of increasing its bandwidth – so that we could, if we wanted, stay hooked to the Net for as long as we please. But then, who would bother buying their expensive ISDN connections?

3D rage?

Dear *PCF*, At what point in time did the bulk of all PC magazines pass summary judgement upon the 3DFX card? Only now, in your April issue, have you deigned to offer an apology for a significant lapse in your otherwise comprehensive journalistic ability.

I'm on dangerous ground here, because I don't want to be dismissed as an obsessive 3DFX devotee attempting to start yet another variant of the immature 'Mine's better than yours' debate. Last January, my imagination was set alight by the potential of 3D cards, and so I sought guidance from the computer press. I found a woeful lack of advice. The only opinions voiced seemed reedy and high-pitched, sung from atop the castrating fence of indecision.

So, I searched the Net, seeking to empower myself with info, developers opinions, interviews and the direction future support was taking. Where was your investigation? It seemed mired in simplicity – a journalistic hazard born of ➡

BAD IDEAS

Dear *PCF*, I've been with *PCF* since issue 14. I've seen its price steadily rise from £2.95 to £3.95 – and now it's a fiver. You blame it on the price of the paper, so why not use your resources better? Ever heard of the Internet? Members of FutureNet could download certain parts of the magazine for a price (all the reviews for 50p, for example). You could have an even more flexible magazine, for an even cheaper price. With a bit of skill, you still might be able to still maintain a coverdisc. The idea has many advantages, because not everyone reads all of your magazine, only a selection of pieces – just take what you want with the on-line mag! You could have a service of e-mailing a customised version of *PCF* to all subscribers. Isn't it about time you got rid of the three and a half inch disk version? Everyone I know has a CD-ROM drive. I'm fed up of going into the newsagent's and only being able to get the floppy version. I don't want it! Can't all of your magazines have a CD? How many of your subscribers order the floppy version? Take a hint, will you?

Stephen C

***PCF* replies:** You're assuming that everyone has a modem, and that everyone can be bothered to pay extra to download sections of the magazine. That isn't actually the case – and anyway, who are we to tell people that if they want to read part of the magazine, then they have to get it off the Internet? Some similar plans have a certain Utopian appeal, but that sounds plain stupid to us. And as soon as people stop buying the HD edition, we'll stop publishing it.

➡ objectivity and the need to cover all cards equally. So, I issue you a challenge, as an enlightened and objective member of the PC press: don't bore us with the statistics of the card – show us the games. I dare you to show large, clear screenshots of *MechWarrior 2*, *Tomb Raider*, *GLquake*, *Pod* and *F1*(the current 3DFX mascots), as opposed to shots of PowerVR's *MechWarrior*, *Ultimate Race* and *Resident Evil*. You've acknowledged that PowerVR isn't the card it should have been, and so too do I recognise the forthcoming PowerVR 2's potential. But it is potential as yet unproven and unsupported. Show the games (especially *GLquake*), explain the 30fps frame rates, and empower your readers. It's about time.

Smurfitd@aol.com

***PCF* replies:** Never apologise, and never explain – that's what our mums taught us. Our initial disdain towards 3DFX cards has more to do with the price than anything else. Now that prices are falling they look increasingly like real competition for the fabulous PowerVR 2 (or PCX2, to give it its proper name). It's a two-horse race between 3DFX and PCX2, and one that PCX2 could win given Videologic's scheme to woo existing 3DFX users. And the games? PowerVR games are coming out now, and looking spectacular. PCF

MICROSCOPICS Our regular round-up of your most bite-sized bits

Adhesive powers

Dear *PCF*, Why not use magic tape? You know, Scotch Magic tape? The stuff that doesn't pull the surface from magazines? By the way – if you used the same sort of cover finish that you do on *PCF Gold*, you'd probably find that magic tape sticks, but comes off the paper even easier.

Steve Leathem, via e-mail

***PCF* replies:** What, have you actually researched this? You clearly have far too much time on your hands, Steve. He's talking about the sticky tape we use to firmly adhere the CD to the front of the magazine, by the way.

Patriot flames

Dear *PCF*, Call me a patriot if you want, but I wish to complain at the fact so many British sites end with .com. With the Web already overrun with US sites, why aren't British companies sticking with .co.uk? With reference to your site in particular – after your revamp I noticed you'd changed to www.futurenet.com. It was the only great British site out there...

Nadim Essa

***PCF* replies:** What's the problem, exactly? The beauty of the Internet is that it's an anonymous, multi-national entity, and it shouldn't really matter if a site is based in the USA, the UK or Slovenia. We'd rather every company used .com, and removed every trace of national identity from the Internet.

Zigazig-ah

Dear *PCF*, Do my eyes deceive me, or is that a picture of Victoria from the Spice Girls on the front cover of *PCF* 69? Those damn Spice Girls are everywhere you look these days!

Peter Cudmore

***PCF* replies:** Indeed. Geri seems to have done away with Jim and taken her place at his desk, and Colin's looking more like Emma every day, and then there's Adam...

Fact fan

Dear *PCF*, Thank you for bringing the issue of Heavy Electricity to the PC arena. The other day, off my face on Cake, 20,000v of Heavy Electricity fell through my PC. I've had trouble with the insurance company, who've written back: "It's a bad feelings kidney whichever way you slice it."

Neil Armitage, Hull

PS. Adam Waring and his sister (Becky) do a *very* strange Pig impression. We're talking about seven years ago, when he went away to work on *Amstrad Format*, or something.

***PCF* replies:** You're wrong, and you're a grotesquely ugly freak.

CLUB CALL

Don't look lost and lonely in the corner of the PC playground. Run around and play tag with a new gang of PC pals. Meet the gang, cos the boys are here...

The Movie Makers Guild

E-mail: homeport@el-dorado.ca.us
Web: http://www.el-dorado.ca.us/~dmnews/mmguild.html
Membership: Free

Did you try your hand at making your own films with the help of our feature in *PCF* 68? Did you succeed in producing your own desktop epic, or was it all a bit too tricky for you, leading to despondency and eventual admittance of defeat? Making your own movies, whether with Super 8, sticky tape and a pair of scissors, or the latest in digital equipment – is no mean feat, so it's helpful to have the support of other like-minded souls to keep you going when you're just about to throw away your clapper board. The Movie Makers Guild is one such collection of avid directors, and it's an excellent source of hints and tips for making the very best movies your PC will allow.

Membership of the Movie Makers Guild doesn't cost a penny (or even a cent, seeing as they're based in the USA). In order to join, simply send them an e-mail containing the word 'storyboard'. The Guild's current project is a 30-second public service announcement entitled *Bullets Never Miss*, and it's inviting people to come up with their own storyboards as a source of visual ideas. The Web site also features regular updates on what's happening in the project, plus articles on the various parts of production, including filming and visual effects. Even if you're not interested in helping them out, you still find the Guild an excellent source of help to keep you going in your directorial aims.

(Illustration by Frank Richard)

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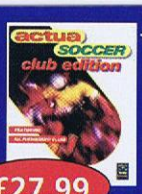

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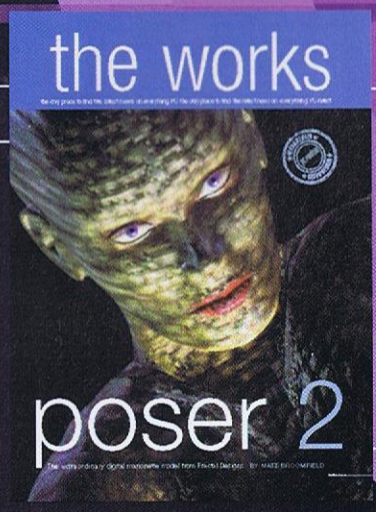

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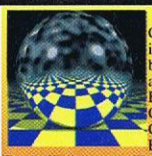

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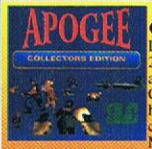

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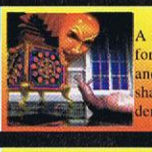

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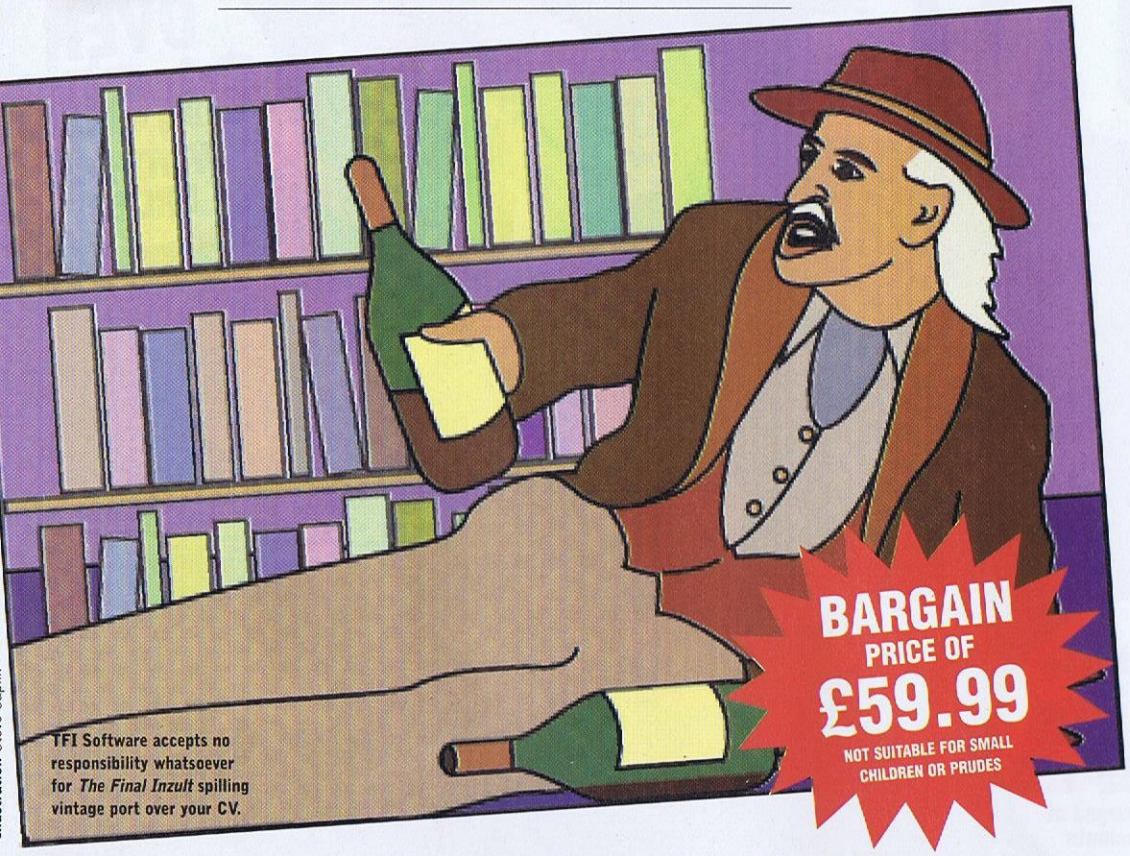

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ABC **82,080**
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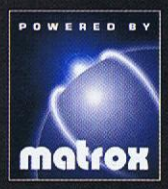

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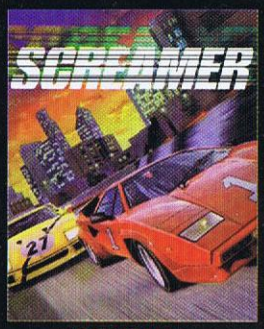

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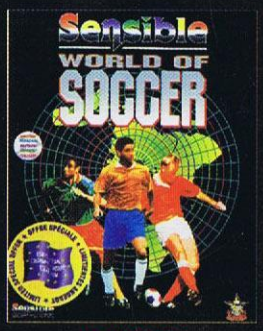

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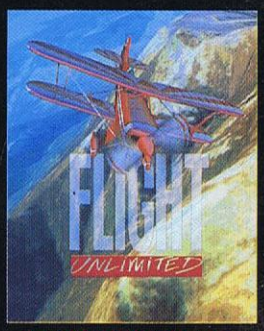

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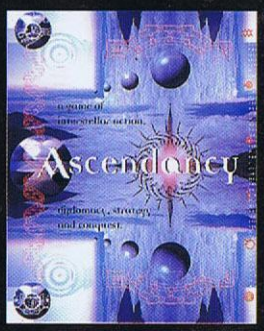

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